MARQUESAS AREA OCEANOGRAPHIC AND FISHERY DATA, JANUARY-MARCH 1957

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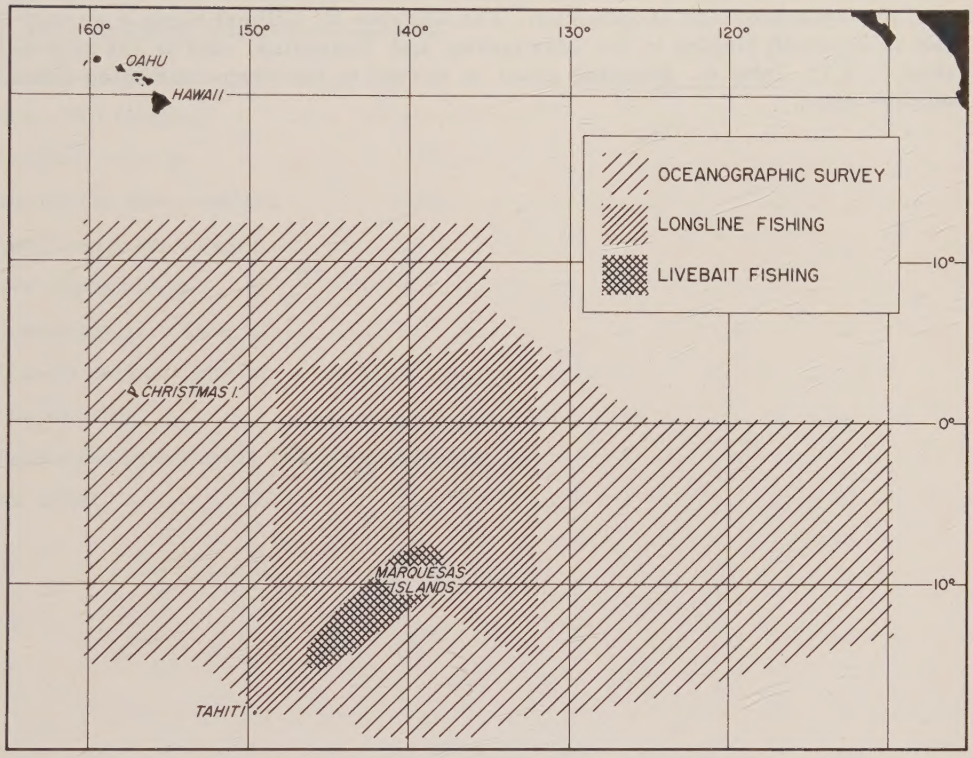

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By

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Honolulu, T. H.

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ABSTRACT

This report presents physical, chemical, and biological observations by a 3-vessel survey of the portion of the southeastern Pacific Ocean which is centered in the Marquesas Islands. The expedition was conducted during the southern hemisphere summer, January-March 1957. The methods for field collection of data and laboratory analysis of samples are described. The observed data are presented without analysis. The Hugh M. Smith made physical, chemical, and biological observations in order to define the features of the oceanic circulation and describe the distribution and abundance of phytoplankton and zooplankton. The Charles H. Gilbert made a survey of the stocks of tuna available to live-bait fishing in the Marquesas and Tuamotus, and of the tuna-bait resources in the Marquesas. The John R. Manning made a survey of the deep-swimming tunas available to fishing with longline gear.

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This report presents the record of observed data from a survey of that portion of the southeastern Pacific Ocean centered in the Marquesas Islands. It is the second POFI report concerning this area; the first (Austin 1957) contains the results from a similar endeavor during August-September 1956. The surveys are part of a program undertaken by the Pacific Oceanic Fishery Investigations (POFI) to study the tuna resources of the southeastern Pacific. The August-September cruises were also part of a broad-scale coverage of the equatorial Pacific, designated operation EQUAPAC.

To make these data rapidly available to other agencies studying the Pacific Ocean, they are presented here without analysis. Descriptive and analytical reports will follow.

Three POFI research vessels were assigned to the survey, each with a different primary mission. The oceanic circulation and productivity of a broad area about the Marquesas was studied by the Hugh M. Smith. The Charles H. Gilbert obtained a measure of the tuna available to live-bait fishing and surface trolling, while the John R. Manning investigated the availability of deep-swimming tuna to longline gear.

The Smith departed Honolulu January 11, 1957, and returned March 26, after having occupied the oceanographic stations shown in figure 1. The cruise was interrupted by a breakdown on January 31. Repairs were effected at sea, and the cruise resumed on February 24, but with some change in the cruise plan.

The Gilbert departed Honolulu January 11, 1957, and returned March 22, after having conducted surface live-bait tuna fishing and surface trolling in the areas shown in figure 2.

The Manning departed Honolulu January 4, 1957, and returned March 12, after having occupied the longline-fishing stations shown in figure 3.

FIELD PROCEDURES

Oceanography and Meteorology

The Smith occupied 57 oceanographic stations (table 1) during the survey period. Nansen bottle casts were made to a depth of 1,200 meters with 13 bottles per cast. The spacing of the Nansen bottles in the upper 200 meters was determined from the temperature characteristics of a bathythermograph trace obtained just before the hydrographic cast.

Water samples were drawn from each bottle for salinity, oxygen, and inorganic-phosphate determinations. The oxygen determinations were made aboard the vessel by the modified Winkler method. No oxygen samples were taken during the breakdown period. Analysis of samples for inorganic phosphate were also made aboard by use of the hydrazine-sulphate modification of Denige's method (King et al. 1957) and a model B, Beckman spectrophotometer. Phosphate samples collected during the breakdown period, on special casts, and at 7 oceanographic stations were frozen for analysis in the laboratory ashore. All the salinity samples taken during the cruise were analyzed ashore.

In addition to the regular oceanographic stations, two special 300-meter casts with 8 Nansen bottles, spaced according to the vertical temperature characteristics, were made for the purpose of collecting water samples for phytoplankton analysis (see fig. 1). On one regular oceanographic station, additional phytoplankton samples were drawn from bottles at selected depths. All of these samples were shipped to the Institutt for Marin Biologi at Oslo, Norway.

During the cruise, 275 bathythermograph observations were made from the Smith (table 2). Lowerings were made every 6 hours between Honolulu and the Equator. Between oceanographic stations, lowerings were made every 3 hours on the run along the Equator and

every 4 hours along the 110°W. meridian. On the remainder of the cruise, one lowering was made between stations 90 miles apart, and two between stations 120 miles apart. During the drifting period, in addition to station casts, 16 BT observations were taken at various times. BT casts were made just before and after each oceanographic station.

BT observations from the Gilbert numbered 240 (table 3). They were made every 6 hours while running between Honolulu and 11°N., and between the Marquesas and Tahiti, and every 3 hours on runs between 11°N. and the Marquesas. A single lowering was made at each surface fishing station in the Marquesas and Tuamotus.

The Manning cruise data included 240 BT records (table 4). The lowerings were made every 6 hours traveling to, from, and between the lines of longline fishing stations. A lowering was made just after setting the longline gear, just before and after retrieving it, and midway between fishing stations.

Surface water samples for salinity analysis were taken by the Smith at each BT lowering between Honolulu and the Equator, also at each BT lowering between oceanographic stations north of 2°N., and occasionally at BT lowerings during the rest of the cruise. These data are included in table 2.

Surface water samples for the determination of salinity and inorganic phosphate were taken from the Gilbert once a day between Honolulu and 5°N., and at alternate BT lowerings between 5°N. and the Marquesas. Salinity samples were taken at each live-bait fishing station. All samples were analyzed ashore (table 5).

From the Manning, surface salinity samples (table 4) were taken at every other BT cast on runs to, from, and between lines of fishing stations, and at each fishing station.

On all vessels, standard weather observations were made 4 times daily, except they were omitted when the vessels were in bays or harbors. They were made only twice daily during the breakdown period of the Smith, and the 1200 (GMT) observation was not taken on the Gilbert and Manning during fishing periods. The observations, as encoded and recorded on USWB Form 1210-F, are presented in tables 6, 7, and 8.

Water transparency and color observations were made from both the Smith and the Gilbert. The transparency measurements were made with a standard 30-cm. Secchi disc; water color was designated by comparison with the Forel standards. These data are presented in tables 9 and 10.

Productivity observations

The rate of carbon fixation by photosynthesis was determined with the radioactive carbon (C^{14}) method, as developed by Steemann Nielsen (1952) and modified by Doty (King et al. 1957), employing water samples taken from the Smith. Surface inorganic phosphate analyses were obtained simultaneously with the C^{14} determinations. These data are presented in table 11.

Three types of plankton hauls were made from the Smith, all with a 1-meter net of 656 Nitex (aperture width 0.66 mm.). Except during the runs between Honolulu and the Equator, an oblique 0-60 meter, 30-minute haul was made each day at about 1130 local time, at the same time as the C^{14} sampling. Each night between 2000 and 2200 local time, an oblique two-net tandem haul was conducted, sampling at 0-60 meters and 0-200 meters. Immediately following this, paired 30-minute surface tows were made. The station data and plankton volumes are presented in table 12.

Eight 30-minute surface tows, employing a similar 1-meter net, were made from the Gilbert in the vicinity of the Marquesas and Tuamotus. The station data and plankton volumes are presented in table 13.

Surface trolling

Except when otherwise engaged, all the vessels did surface trolling during daylight hours with varying numbers of lines. The catches and related data for each of the three vessels are listed in tables 15, 16, and 17. The common and scientific names of fish caught are listed in table 14.

Longline fishing

Routinely, 60 baskets of 11-hook longline fishing gear were set from the Manning at each fishing station; 38 stations were fished successfully. The gear used was of POFI design, as described by Mann (1955). Pacific herring (Clupea pallasi) was used for bait. The station data and catch per 100 hooks fished are presented in table 18; the catch record in numbers of fish is presented in table 19.

Live-bait fishing

Fishing trials with live-bait were made from the Gilbert on 103 surface tuna schools in the Marquesas and Tuamotus. The Marquesan sardine and goatfish were used as bait. Of the total catch of 4,838 skipjack and 52 yellowfin, 797 skipjack and 10 yellowfin were marked with the POFI type D-2 tag and released, all in the Marquesas area. The station data, catches, and bait used are listed in table 20. The live-bait fishing techniques for surface schools were similar to the techniques of the Hawaiian skipjack fishery, as described by June (1951).

Baitfish surveys

Two procedures were used for conducting baitfish surveys in the Marquesas; day visual scouting and night-light fishing. Visual scouting during the day was done by three or four swimmers, equipped with faceplates, making a "sweep" of the shallow water in the bays and noting the schools of bait-sized fish. Night-light fishing was done with the Gilbert anchored in about 40 feet of water. Marquesan sardines of all sizes were attracted to the diffused light from a floodlight, and the fish were caught alongside the vessel using a "night net" of specialized design. Results of visual scouting, day fishing, and night-light fishing are presented in table 21.

Biological observations

Routinely, the fork length of representative samples of the tunas and bait species was taken and recorded. Station data and length frequency summaries of catches made from both the Gilbert and Manning are presented in tables 22 through 28, inclusive.

During daylight hours on all three vessels, a watch was kept for birds, tuna schools, and aquatic mammals. Summaries of these observations are presented in tables 29 through 32, inclusive.

Field party personnel

Hugh M. Smith
- Barnes Collinson, Master
- Everet C. Jones, Field Party Chief
- Thomas S. Hida, Fishery Aid
- John W. Van Landingham, Physical Science Aid (Chemist)
- Robert T. B. Iversen, Physical Science Aid

Charles H. Gilbert
- William T. Tanaka, Master
- Robert C. Wilson, Field Party Chief
- Heeny S. H. Yuen, Fishery Research Biologist
- Garth I. Murphy, Fishery Research Biologist (first half of cruise)

John R. Manning
- Fred E. Barnett, Master
- Wilvan G. Van Campen, Field Party Chief
- Howard O. Yoshida, Fishery Research Biologist

LABORATORY PROCEDURES

Oceanographic data

The salinity samples were analyzed by the Fajans modification of the Mohr method (Van Landingham 1957). The inorganic phosphate samples were analyzed by the hydrazine sulphate modification of Denige's method (King et al. 1957).

The oceanographic station data were processed by the use of techniques described by Montgomery (1954), Montgomery and Wooster (1954), Stroup (1954), and King et al. (1957). The curves for each station are included in table 1.

Rate of carbon fixation

A detailed description of laboratory procedures for the determination of the amount of C^{14} photosynthetically fixed per unit of time and associated calculations has been given by King et al. (1957). The counting, using a Tracerlab SC16 windowless gas flow counter and a Tracerlab 1000 Scaler or a Nuclear Chicago 161A Scaler, was done at the University of Hawaii, Department of Botany. The results of these measurements are given in table 11.

Zooplankton

The displacement volumes of the plankton collected on oblique and surface tows made from the Smith and the surface tows made from the Gilbert are given in tables 12 and 13. These volumes were determined after removing all fish eggs and larvae, as well as all "jellies" greater than 2 cm. in length. The details of the method are described by Hida and King (1955).

Personnel processing samples and data
(in addition to the authors)

Oceanography - M. L. Godfrey, Physical Science Aid

C^{14} - M. S. Doty, Professor of Botany, University of Hawaii
M. Oguri, Junior Botanist, University of Hawaii

Zooplankton - T. S. Hida, Fishery Aid

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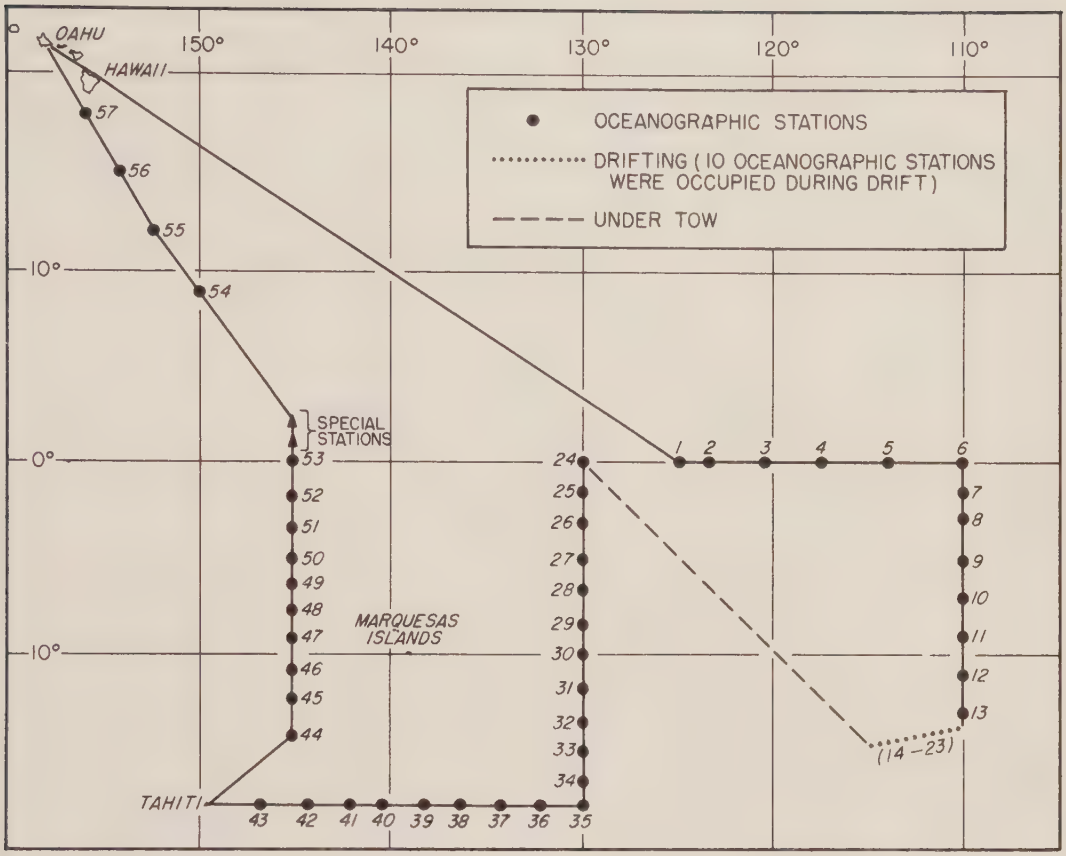


Figure 1.--Oceanographic stations occupied during Hugh M. Smith cruise 38.

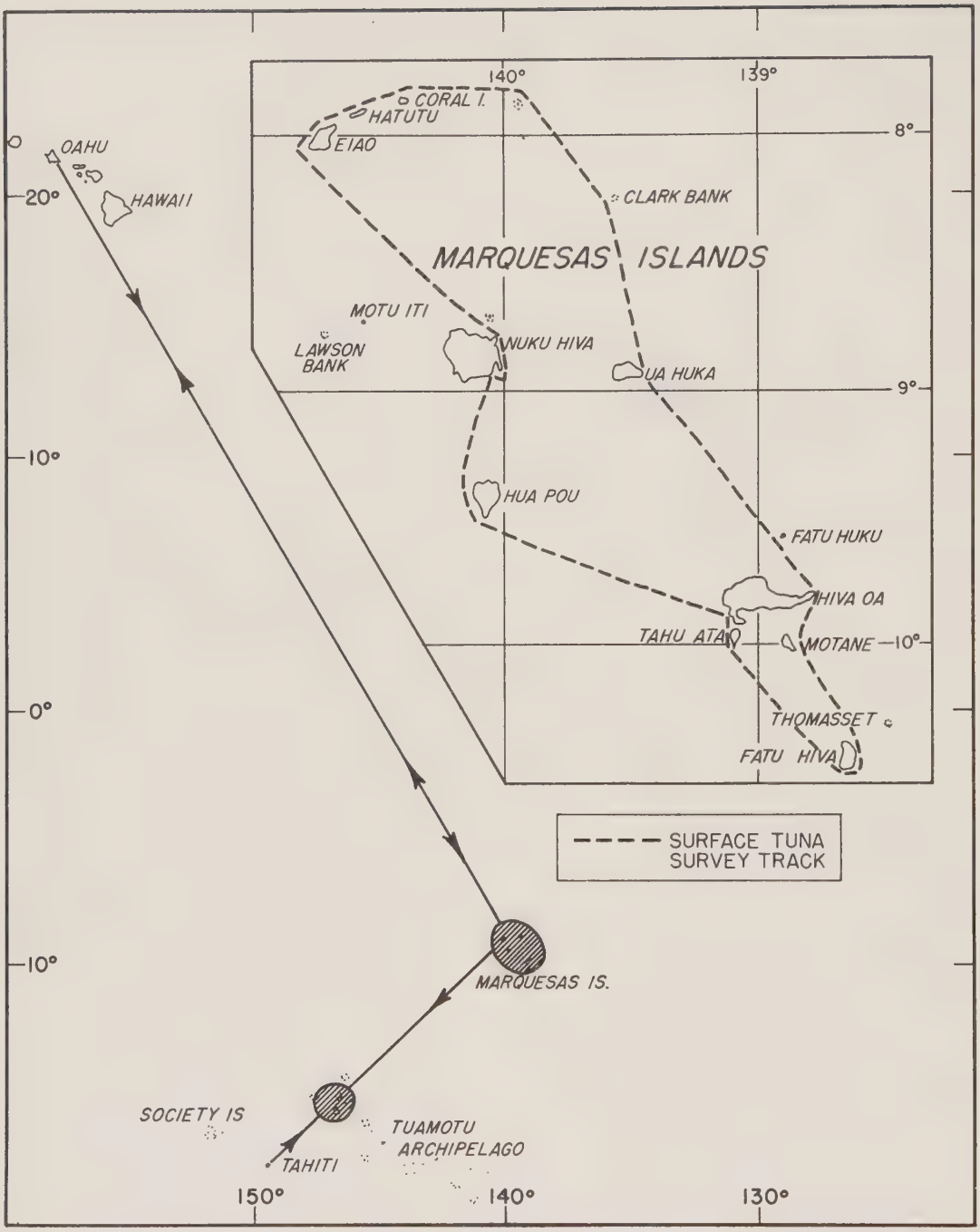


Figure 2.--Charles H. Gilbert cruise 32 to the Marquesas and Tuamotu islands.

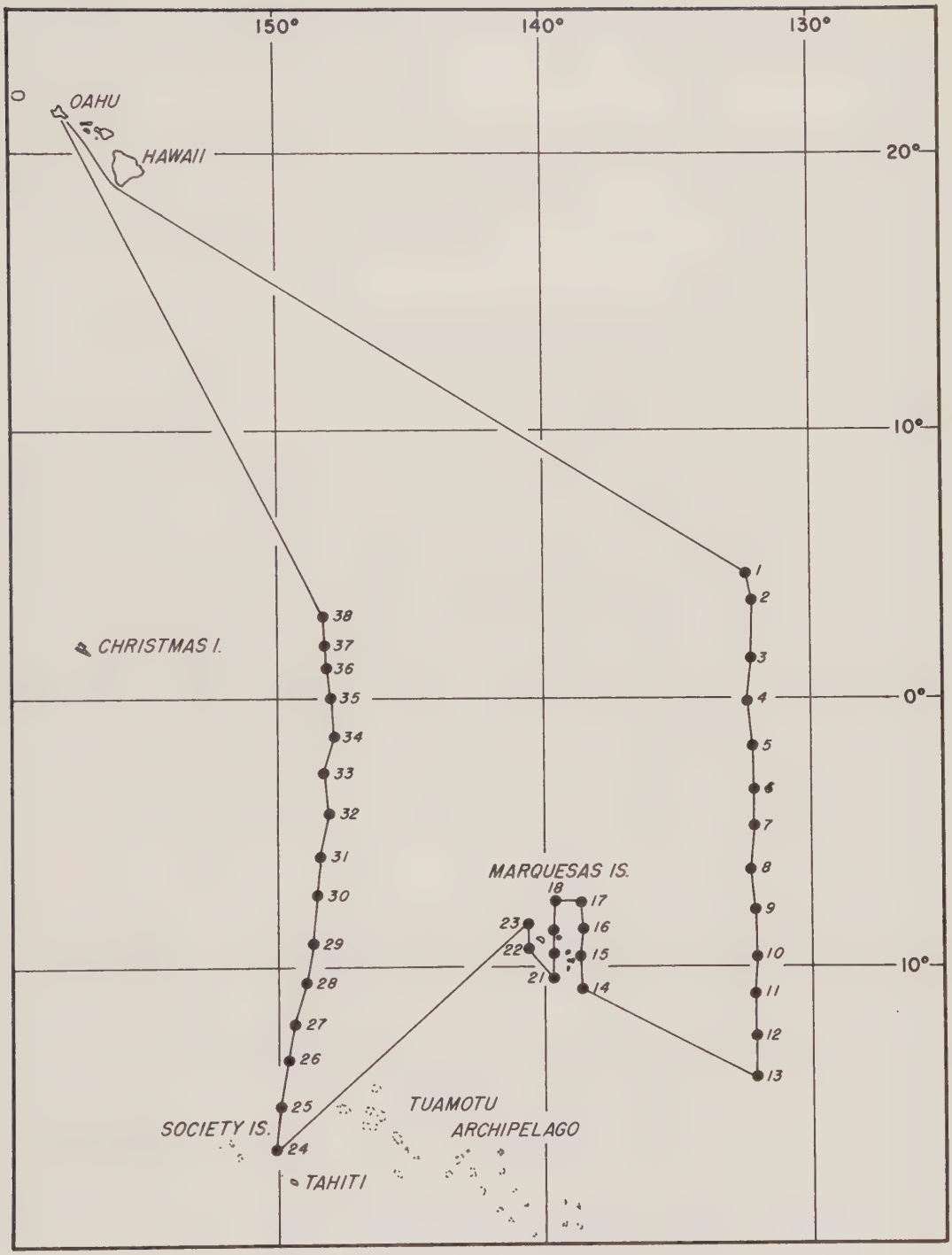


Figure 3.--Longline station positions, John R. Manning cruise 34.

Table 1.--Station curves and observed oceanographic data,
Hugh M. Smith cruise 38

NOTES ON OCEANOGRAPHIC STATION CURVES

Thermosteric anomaly (oblique lines) are in centiliters per ton (see Mongtomgery 1954). Where temperatures of paired thermometers differed by more than 0.05°C. below 300 m. or more than 0.10°C. above 300 m., both values are plotted and designated by the symbol ⩓. The other variables are plotted for each of the temperature values, see station O-1. When the station curve is not drawn through a plotted value, it is considered a gross error and not used.

Explanatory code for station curves

- ⩓ Reversing thermometer temperatures °C.
- • BT temperature °C.
- ⊡ Salinity ‰
- ▽ Dissolved oxygen ml./L.
- ⊙ Inorganic phosphate µg at./L.

NOTES ON OBSERVED OCEANOGRAPHIC DATA

Where more than one cast was made on a station, they are separated by a horizontal line. The cast number is indicated by a Roman numeral in the margin.

Where the corrected, paired, protected thermometer readings differed by more than 0.05°C. below 300 m. or more than 0.10°C. above 300 m., both temperature values are tabulated and the depth and salinity are repeated. Delta-t calculated using each temperature value is carried.

The following oceanographic stations were pretrips. Surface temperature and salinity for these stations will be found in table 2.

Station No.	Latitude	Longitude	PO_4, µg at./L.	BT No.
38	17°40.0'S	136°16.0'W	0.29	193
39	17°31.0'S	138°10.0'W	0.29	197
52	01°46.0'S	144°53.6'W	NG	241

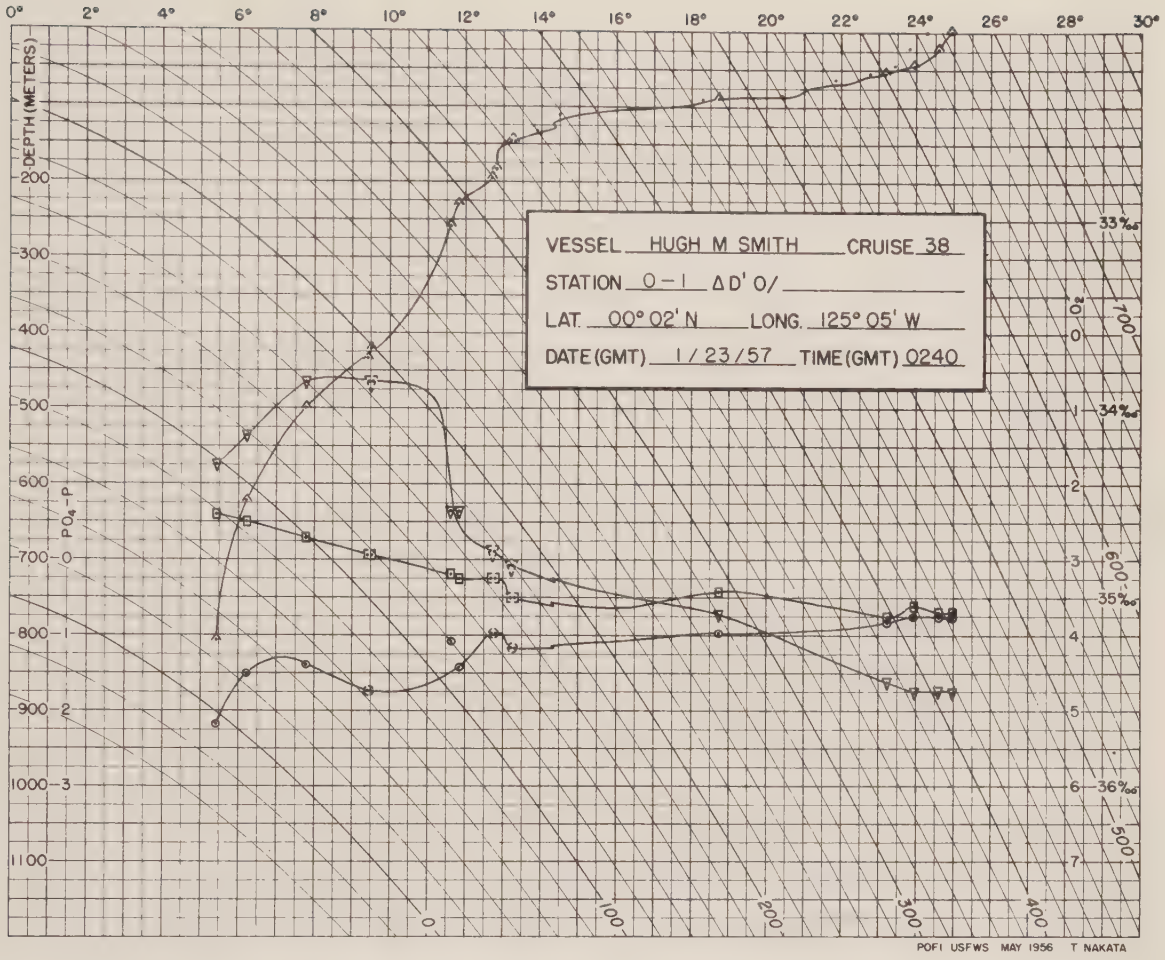
Wind velocity was measured with an anemometer 30 meters above the sea surface. The direction (given to the nearest 10°) is that from which the wind was blowing, measured through 360° from north.

Oxygen samples on station O-25 were improperly labeled in the field and have been arranged according to the station curves on either side of the station. Oxygen samples were not taken while the vessel was drifting (stations O-14 through O-23).

Phosphate values on stations O-14 through O-23 were deleted as examination indicated they were erroneous. Stations O-46, O-47, and O-49 appeared questionable but were retained for information.

Explanatory code for tabulated data

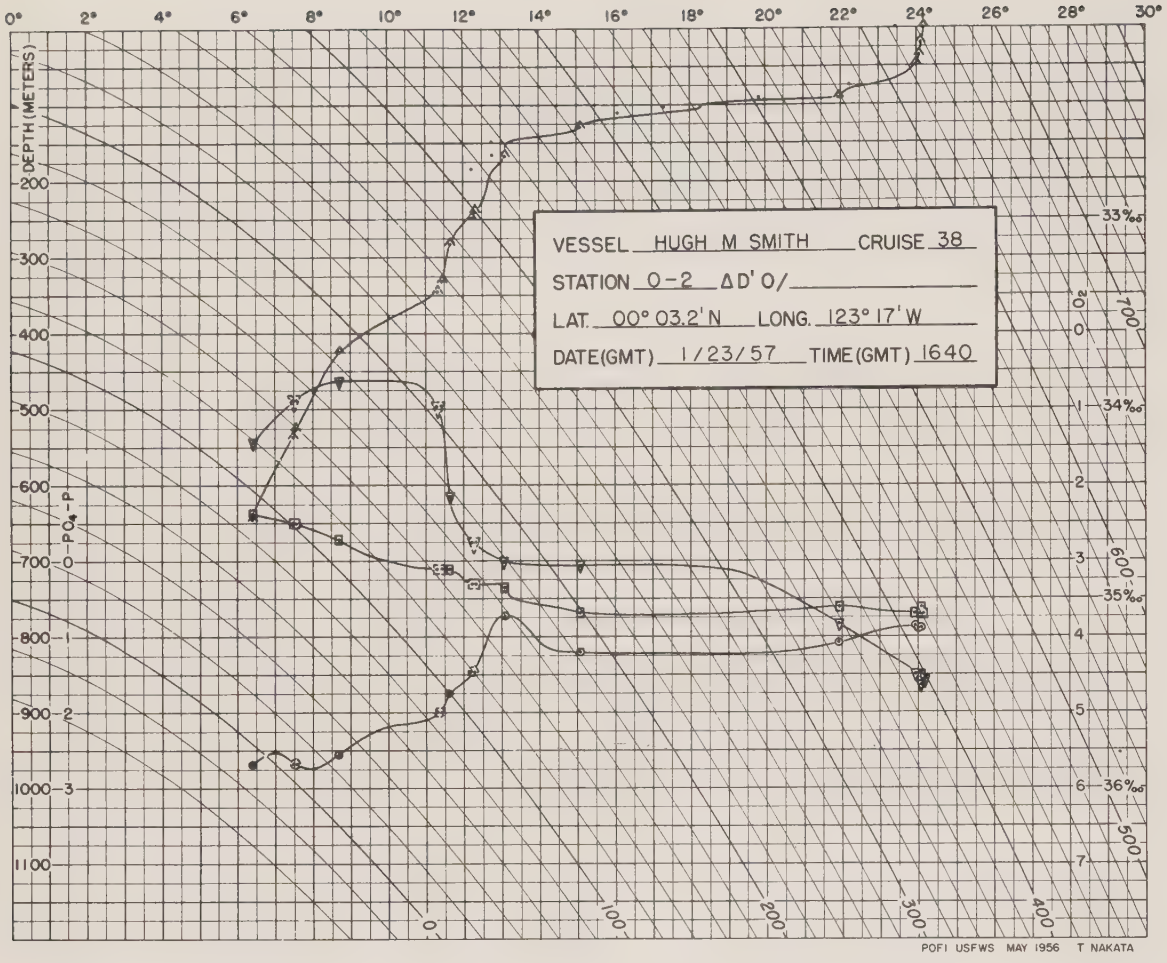
- NG - The value or line is in error and is discarded.
- NS - This water sample was lost.
- PT - Nansen bottle pretripped and data are unusable.
- Q - The value seems questionable but was used in construction of the station curve.
- P - The value is questionable and while carried was not used in drawing the station curve.


VESSEL HUGH M SMITH CRUISE 38
STATION 0-1 ΔD' O/
LAT. 00° 02' N LONG. 125° 05' W
DATE (GMT) 1/23/57 TIME (GMT) 0240
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

Weather 02, cloud coverage 1. Wind: 090°, 10 kt. Sea: 1-3 ft. Wire angle: 17°.
BT slide: 41. Dry bulb: 76.7°F. Wet bulb: 71.9°F. Barometric pressure: 1010 mb.

Depth, m. 1/	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.97	35.07	447.0	4.76	0.75
21	24.62	35.08	436.2	4.74	0.74
43	23.95	35.05	419.1	4.74	0.74
54	23.21	35.10	394.8	4.61	0.81
89	18.74	34.97	289.1	3.72	0.98
148	13.22	35.01	166.0	3.04	1.18
148	13.33	35.01	168.2	-	-
230	11.80	34.90	147.7	2.34 P	1.44
195	12.70	34.90	164.2	2.90	0.98
184	12.81	34.90	166.3	-	-
259	11.62	34.88	146.2	2.36	1.10 P
433	9.42	34.78	116.7	0.63	1.73
421	9.51	34.78	118.2	-	-
500	7.80	34.69	99.2	0.65	1.39
622	6.24	34.60	85.2	1.37	1.52
808	5.42	34.56	78.4	1.73	2.19

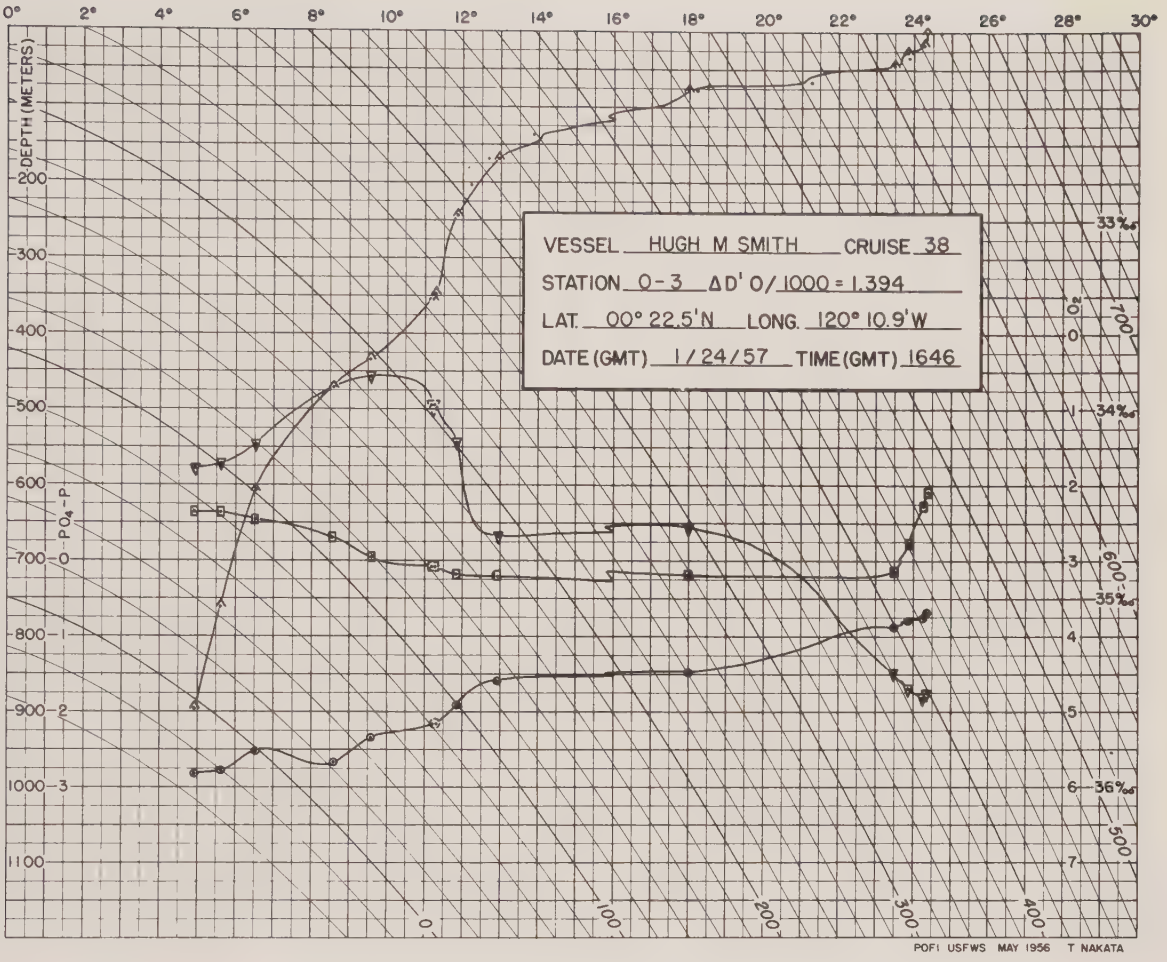
1/ Depths unreliable; too many pretrips


VESSEL HUGH M SMITH CRUISE 38
STATION 0-2 ΔD' 0/
LAT. 00° 03.2' N LONG. 123° 17' W
DATE(GMT) 1/23/57 TIME(GMT) 1640
DEPTH (METERS)
P-O-P
POFI USFWS MAY 1956 T NAKATA

Weather: 02, cloud coverage 3. Wind: 090°, 12 kt. Sea: 1-3 ft. Wire angle: 25°.
BT slide: 45. Dry bulb: 76.0°F. Wet bulb: 72.1°F. Barometric pressure: 1012 mb.

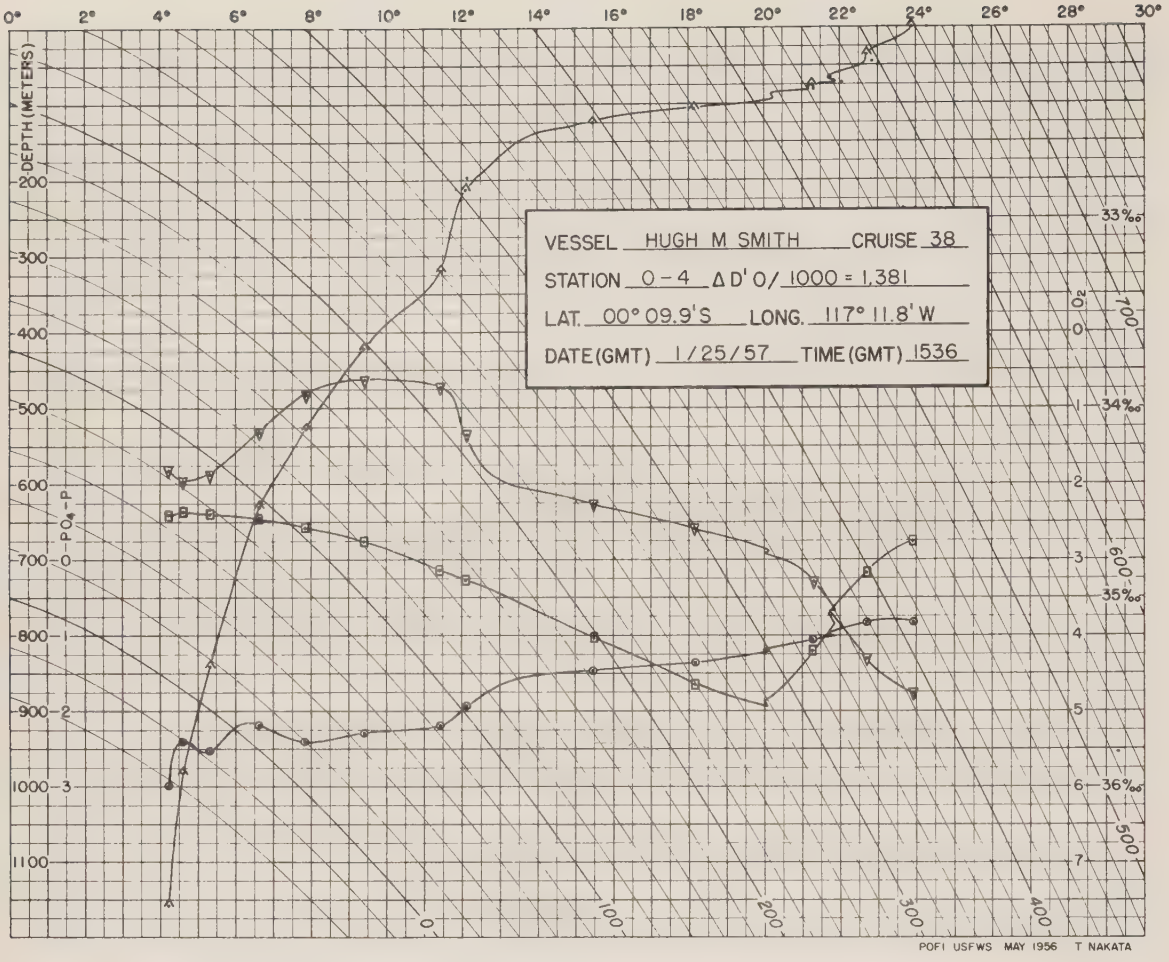
Depth, m. 1/	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.19	35.07	424.5	4.58	NG
18	24.12	35.05	424.1	4.63	0.90
35	24.07	35.08	420.5	4.52	0.89
48	23.97	35.08	417.8	4.50	0.87
90	21.93	35.05	363.8	3.82	1.07
129	15.09	35.07	199.2	3.05	1.20
167	13.10	34.94	168.8	3.00	0.71
249	12.23	34.92	154.2	2.75	1.47
240	12.31	34.92	155.4	-	-
282	11.65	34.85	148.8	2.15	1.73
345	11.31	34.85	142.8	0.98	2.00
331	11.42	34.85	144.7	-	-
427	8.70	34.69	112.3	0.63	2.53
527	7.58	34.61	101.9	0.89	2.67
538	7.50	34.61	100.8	-	-
644	6.41	34.56	90.4	1.43	2.68

1/ Depths unreliable; too many pretrips


VESSEL HUGH M SMITH CRUISE 38
STATION 0-3 ΔD' 0/1000 = 1.394
LAT. 00° 22.5'N LONG. 120° 10.9'W
DATE (GMT) 1/24/57 TIME (GMT) 1646
DEPTH (METERS)
PO4-P
POF: USFWS MAY 1956 T NAKATA

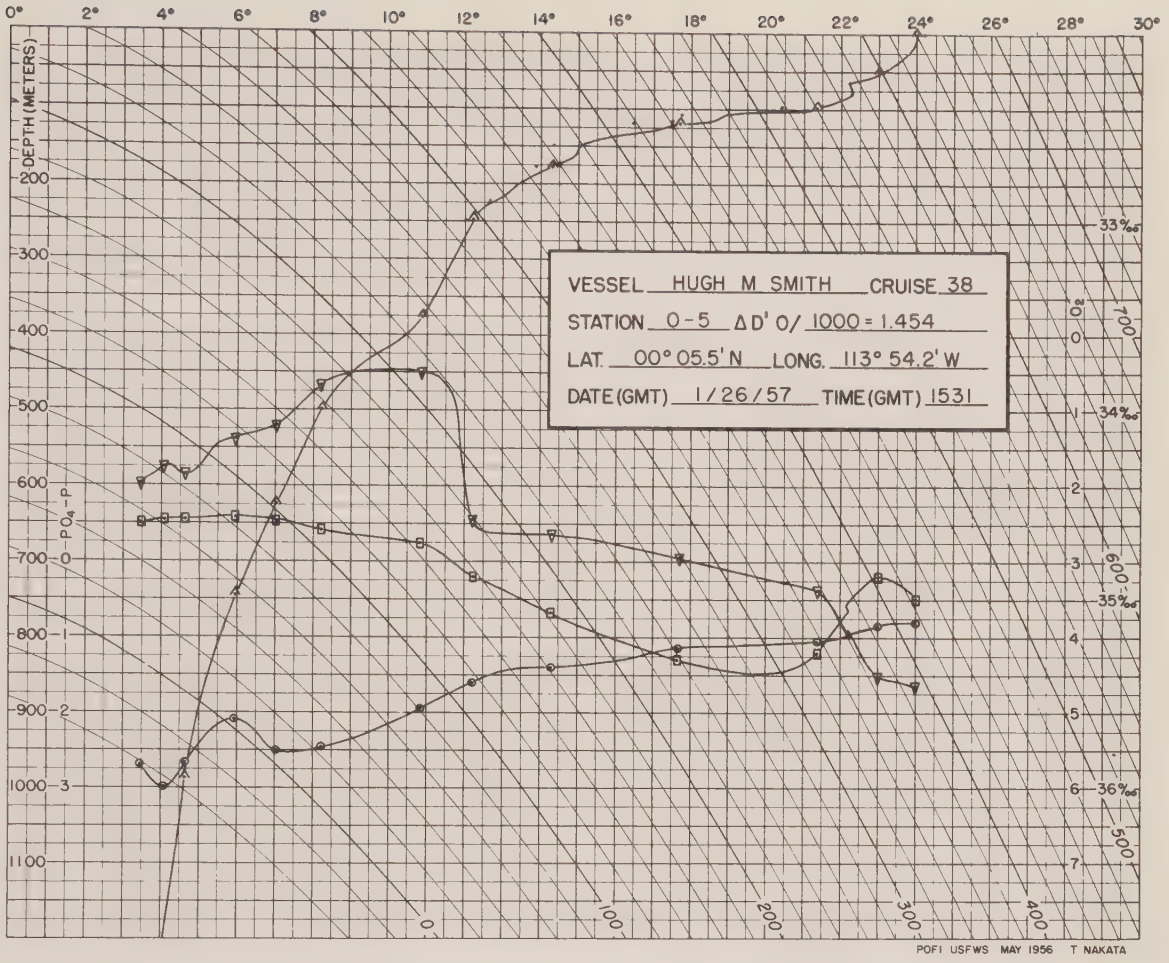
Weather: 02, cloud coverage 2. Wind: 140°, 14 kt. Sea: 3-5 ft. Wire angle: 35°.
BT slide: 53. Dry bulb: 77.6°F. Wet bulb: 72.9°F. Barometric pressure: 1013 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.38	34.43	476.0	4.74	0.68
16	24.28	34.51	467.5	4.80	0.74
27	23.88	34.70	442.3	4.69	0.79
46	23.48	34.85	420.4	4.49	0.87
77	18.00	34.87	278.5	2.55	1.46
169	12.94	34.88	170.2	2.66	1.60
252	11.79	34.87	149.8	1.43	1.91
354	11.22	34.83	142.7	0.95	2.18
349	11.27	34.83	143.5	-	-
433	9.58	34.78	119.0	0.54	2.34
465	8.65	34.67	113.0	0.70	2.67
607	6.55	34.58	90.5	1.48	2.52
761	5.61	34.54	82.3	1.71	2.79
897	4.92	34.54	74.3	1.79	2.81



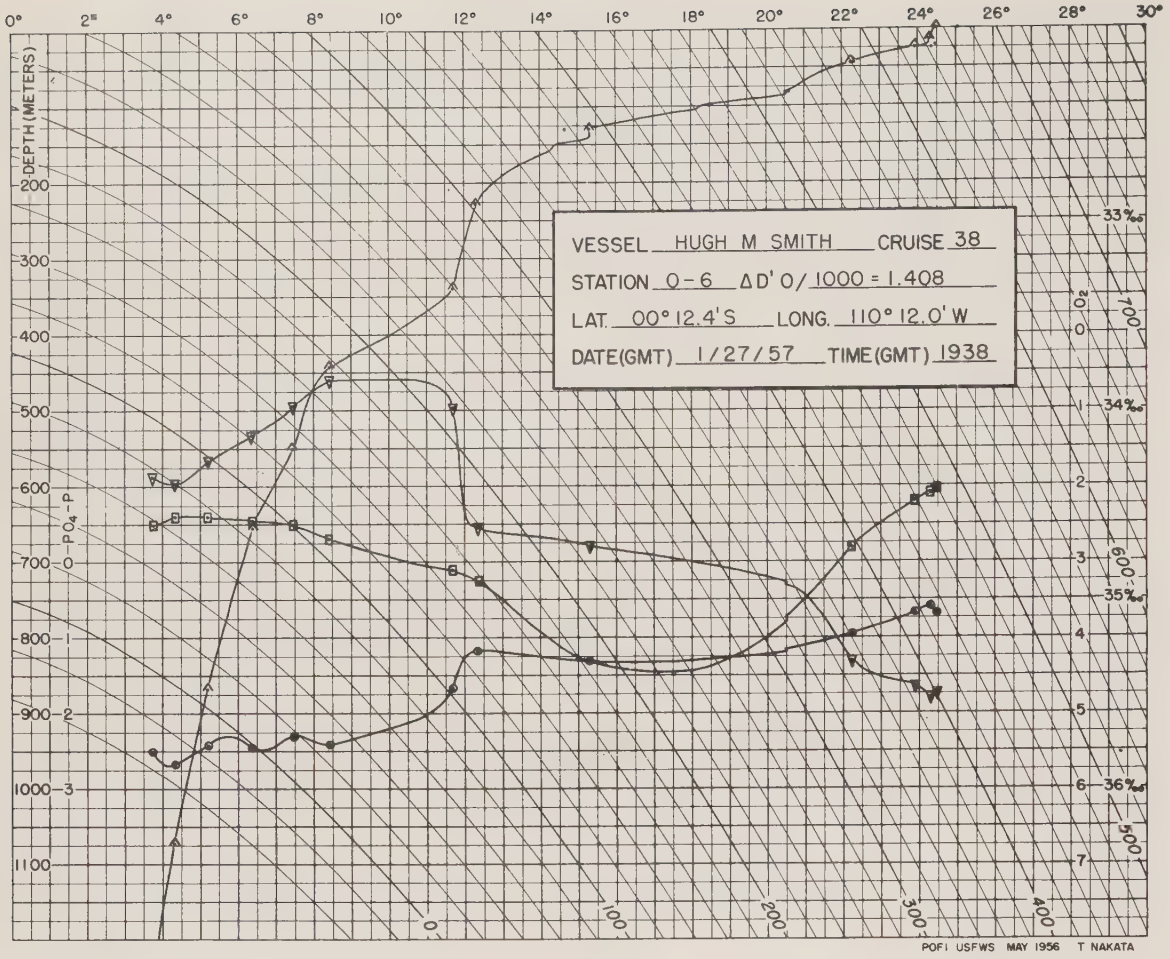
Weather: 03, cloud coverage 7. Wind: 150°, 11 kt. Sea: 1-3 ft. Wire angle: 20°.
BT slide: 61. Dry bulb: 75.5°F. Wet bulb: 72.1°F. Barometric pressure: 1013 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	23.92	34.70	443.5	4.74	0.82
35	22.70	34.87	397.5	4.30	0.82
75	21.29	35.28	330.5	3.29	1.06
106	18.19	35.46	240.1	2.58	1.34
123	15.44	35.21	196.5	2.25	1.46
212	12.12	34.90	153.3	1.35	1.93
318	11.42	34.85	144.8	0.72	2.19
421	9.42	34.70	122.5	0.61	2.28
527	7.86	34.63	104.3	0.81	2.40
630	6.62	34.58	91.6	1.31	2.18
840	5.32	34.56	77.3	1.86	2.52
982	4.60	34.54	70.9	1.96	2.40
1157	4.23	34.56	65.7	1.81	2.99


VESSEL HUGH M SMITH CRUISE 38
STATION 0-5 ΔD' 0/1000 = 1.454
LAT. 00° 05.5' N LONG. 113° 54.2' W
DATE (GMT) 1/26/57 TIME (GMT) 1531
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

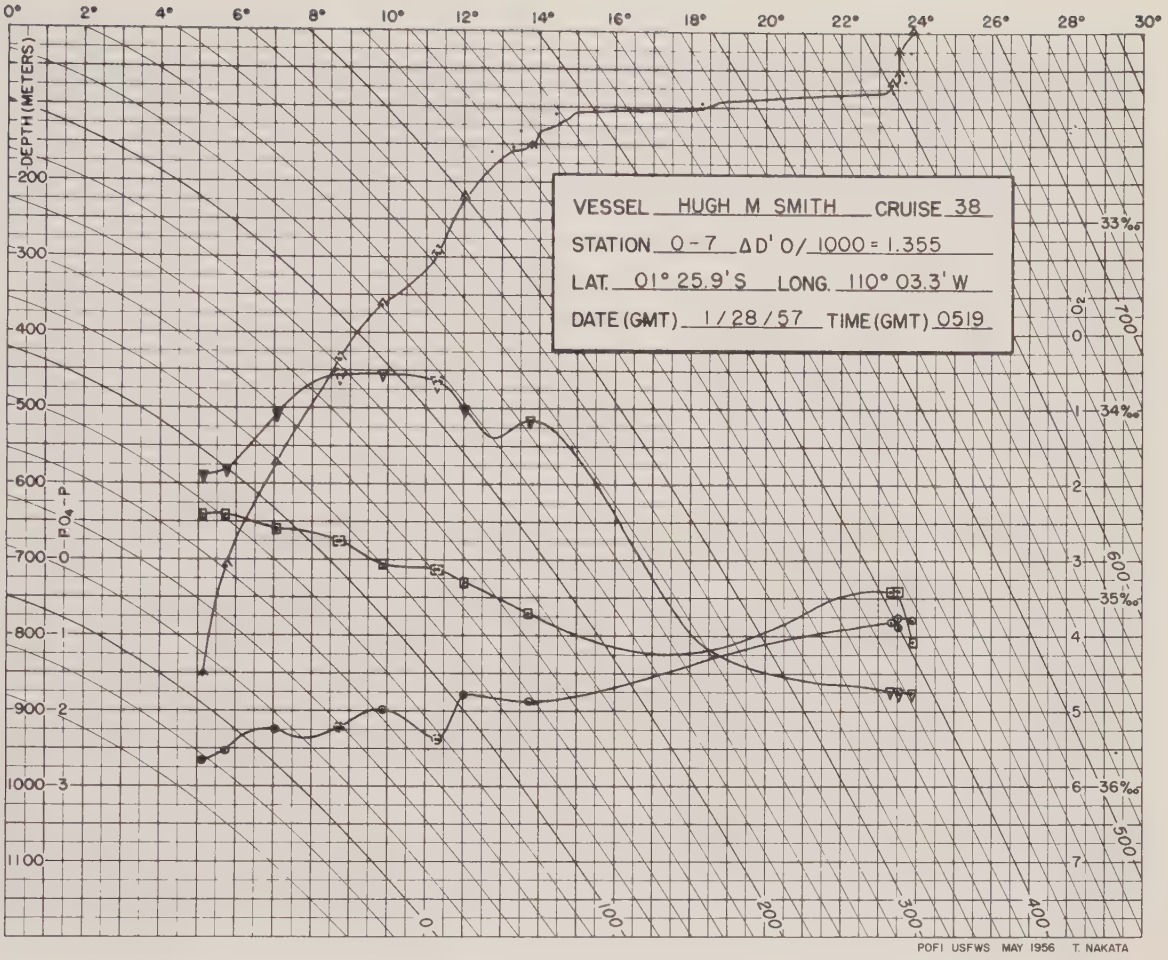
Weather: 01, cloud coverage 4. Wind: 150°, 14 kt. Sea: 1-3 ft. Wire angle: 19°.
BT slide: 70. Dry bulb: 77.3°F. Wet bulb: 72.7°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.01	34.99	425.4	4.64	0.80
52	23.02	34.88	405.4	4.52	0.83
98	21.39	35.28	333.1	3.36	1.06
119	17.70	35.32	238.9	2.93	1.14
177	14.32	35.07	183.3	2.64	1.40
249	12.23	34.88	157.0	2.45	1.61
376	10.90	34.78	140.7	0.50	1.94
497	8.22	34.63	109.7	0.65	2.47
623	7.02	34.58	96.7	1.20	2.51
744	5.94	34.56	84.6	1.36	2.10
987	4.64	34.58	68.3	1.84	2.67
1216	4.10	34.58	62.7	1.75	3.00
1432	3.48	34.60	55.4	1.96	2.70


VESSEL HUGH M SMITH CRUISE 38
STATION 0-6 ΔD' O/ 1000 = 1.408
LAT. 00° 12.4' S LONG. 110° 12.0' W
DATE(GMT) 1/27/57 TIME(GMT) 1938
DEPTH (METERS)
PO4-P
POF: USFWS MAY 1956 T NAKATA

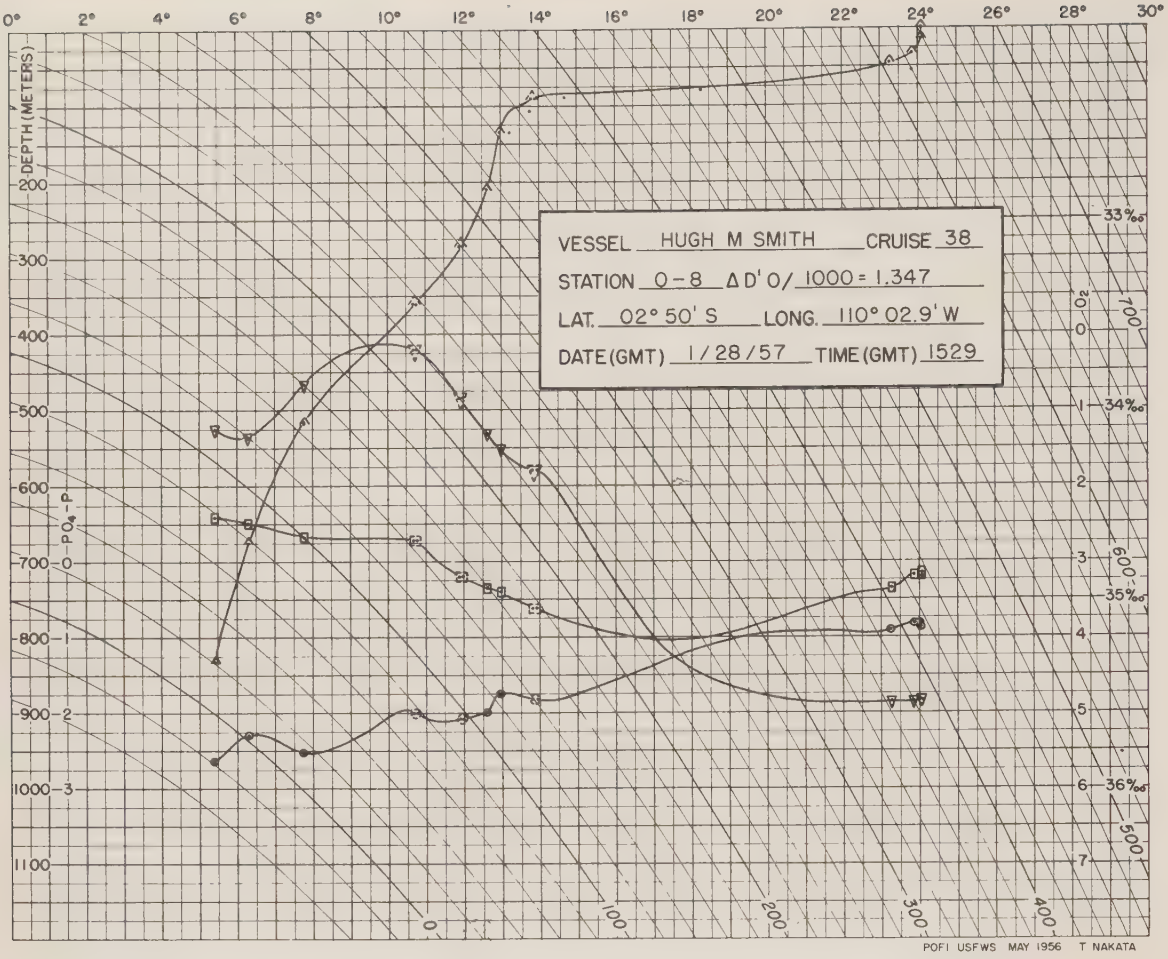
Weather: 01, cloud coverage 1. Wind: 100°, 11 kt. Sea: 1-3 ft. Wire angle: 24°.
BT slide: 80. Dry bulb: 76.8°F. Wet bulb: 72.4°F. Barometric pressure: 1012 mb.

Depth, m.	^{o}T, °C.	^{o}S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.47	34.42	479.3	4.75	0.68
14	24.32	34.43	474.3	4.80	0.59
24	23.90	34.47	459.5	4.66	0.68
43	22.24	34.72	396.0	4.31	0.94
130	15.32	35.32	185.8	2.78	1.29
229	12.34	34.90	157.6	2.54	1.17
340	11.67	34.85	149.1	0.95	1.68
443	8.43	34.67	109.8	0.60	2.40
551	7.46	34.61	100.3	0.93	2.30
656	6.40	34.58	88.7	1.32	2.45
868	5.20	34.56	75.9	1.68	2.40
1072	4.34	34.56	66.7	1.96	2.65
1270	3.76	34.61	57.3	1.89	2.52


VESSEL HUGH M SMITH CRUISE 38
STATION 0-7 ΔD' O/ 1000 = 1.355
LAT. 01° 25.9'S LONG. 110° 03.3' W
DATE (GMT) 1/28/57 TIME (GMT) 0519
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

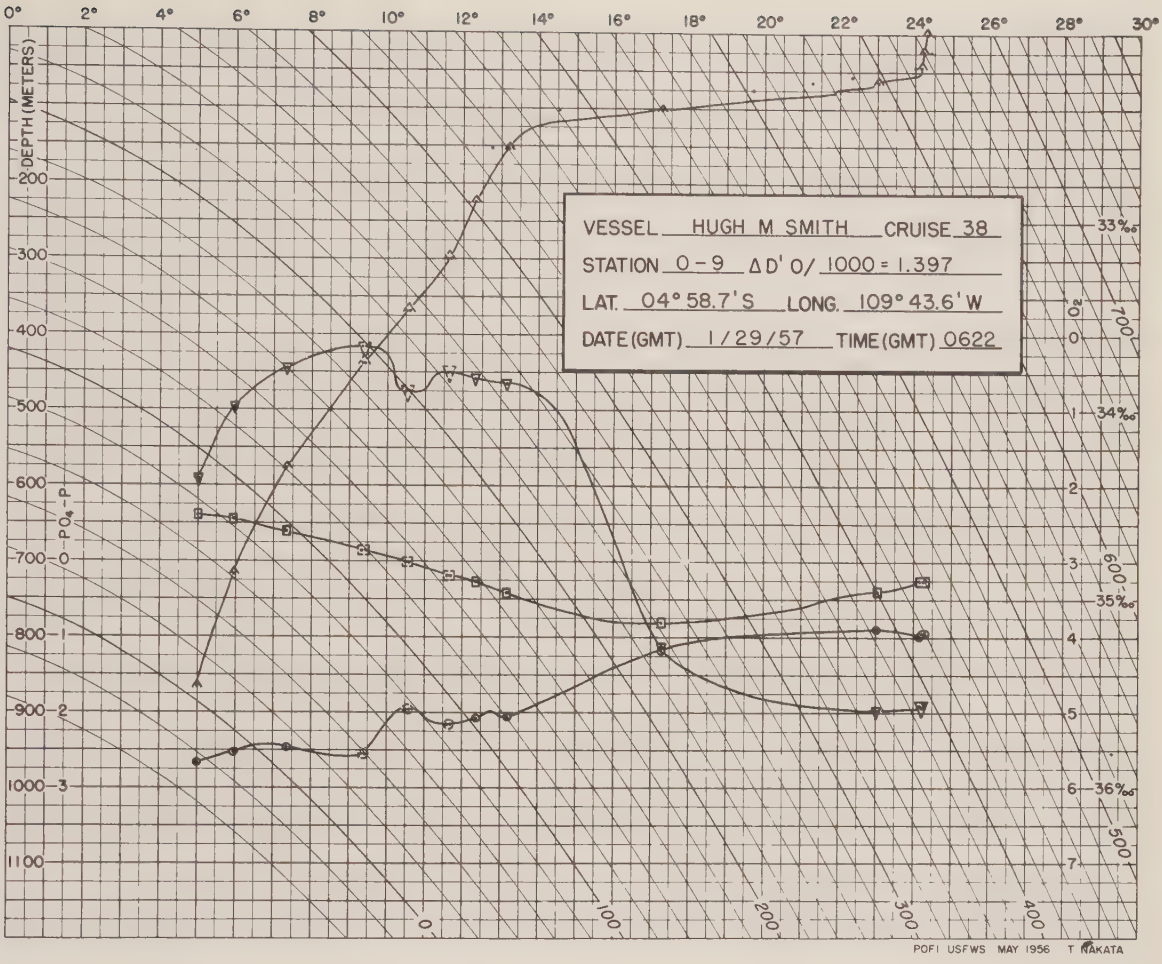
Weather: 02, cloud coverage 8. Wind: 180°, 10 kt. Sea: 1-3 ft. Wire angle: 05°.
BT slide: 82. Dry bulb: 76.3°F. Wet bulb: 72.9°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	23.90	35.23	404.7	4.76	0.79
27	23.54	34.96	414.2	4.73	0.76
55	23.56	34.97	414.0	4.74	0.88
70	23.37	34.97	408.5	4.73	0.82
NG	-	-	-	-	-
153	13.78	35.08	171.8	1.16	1.87
223	12.03	34.92	150.5	1.04	1.79
296	11.27	34.85	142.1	0.66	2.39
296	11.35	34.85	143.6	-	-
364	9.88	34.83	120.0	0.54	1.99
435	8.71	34.70	111.6	0.56	2.22
435	8.77	34.70	112.3	-	-
573	7.06	34.63	93.4	1.07	2.24
710	5.76	34.56	82.3	1.80	2.52
852	5.16	34.56	75.5	1.87	2.65


VESSEL HUGH M SMITH CRUISE 38
STATION 0-8 ΔD' O/ 1000 = 1.347
LAT. 02° 50' S LONG. 110° 02.9' W
DATE (GMT) 1/28/57 TIME (GMT) 1529
DEPTH (METERS)
POFI USFWS MAY 1956 T NAKATA

Weather: 02, cloud coverage 3. Wind: 160°, 15 kt. Sea: 3-5 ft. Wire angle: < 05°.
BT slide: 85. Dry bulb: 76.1°F. Wet bulb: 72.8°F. Barometric pressure: 1012 mb.

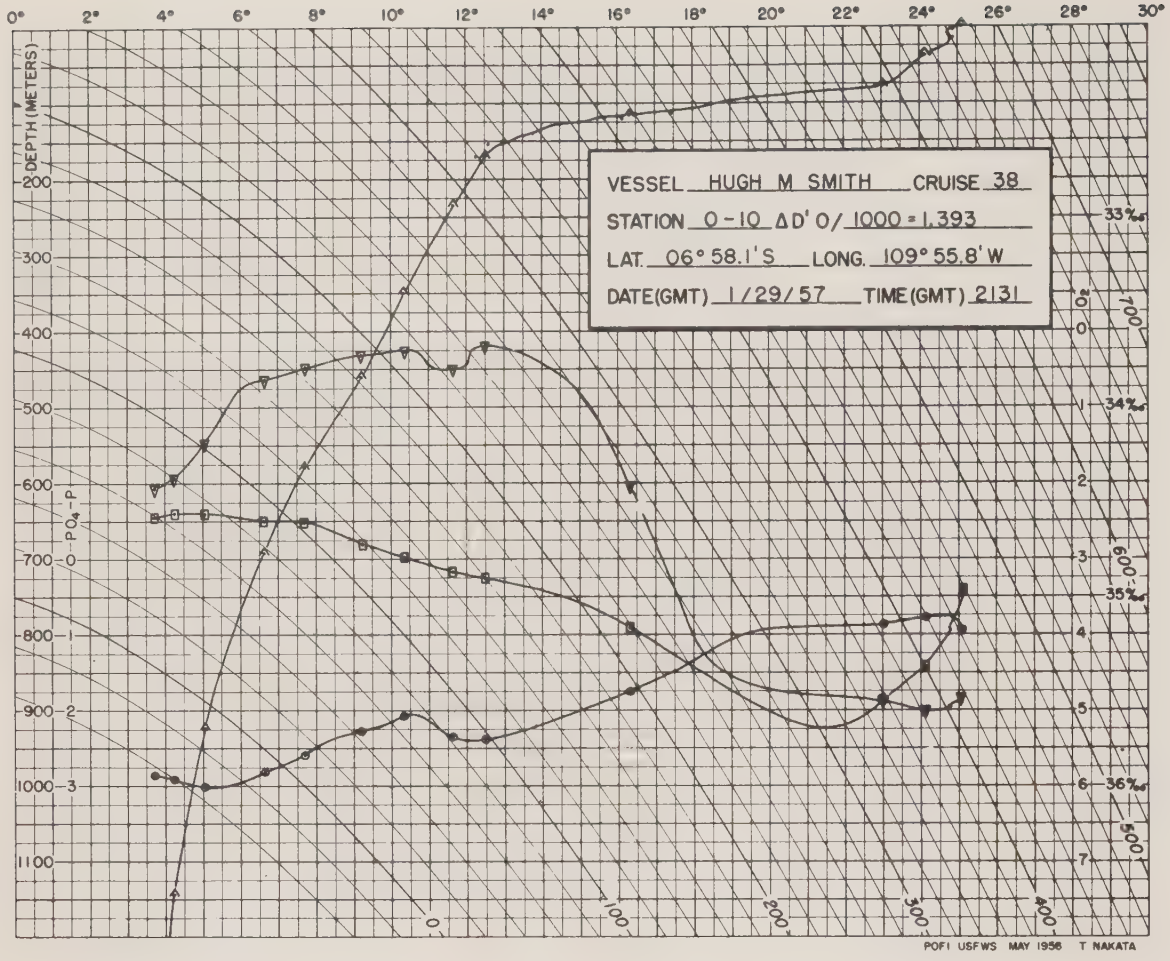
Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.09	34.87	436.0	4.84	0.88
16	24.06	34.88	434.6	4.84	0.82
33	23.89	34.88	429.7	4.85	0.82
46	23.28	34.94	408.3	4.85	0.90
PT	-	-	-	-	-
90	13.82	35.05	174.8	1.77	1.82
90	13.92	35.05	176.7	-	-
133	12.98	34.96	165.2	1.52	1.75
208	12.62	34.94	159.7	1.32	2.00
284	11.90	34.88	150.9	0.83	2.09
284	11.96	34.88	152.0	-	-
360	10.69	34.69	143.7	0.20	2.00
360	10.79	34.69	145.4	-	-
517	7.78	34.67	100.4	0.64	2.51
675	6.34	34.60	86.4	1.33	2.29
833	5.42	34.56	78.4	1.25	2.65


VESSEL HUGH M SMITH CRUISE 38
STATION 0-9 ΔD' O/ 1000 = 1.397
LAT. 04° 58.7' S LONG. 109° 43.6' W
DATE (GMT) 1/29/57 TIME (GMT) 0622
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

Weather: 02, cloud coverage 2. Wind: 150°, 15 kt. Sea: 3-5 ft. Wire angle: 10°.
BT slide: 90. Dry bulb: 75.7°F. Wet bulb: 72.4°F. Barometric pressure: 1012 mb.

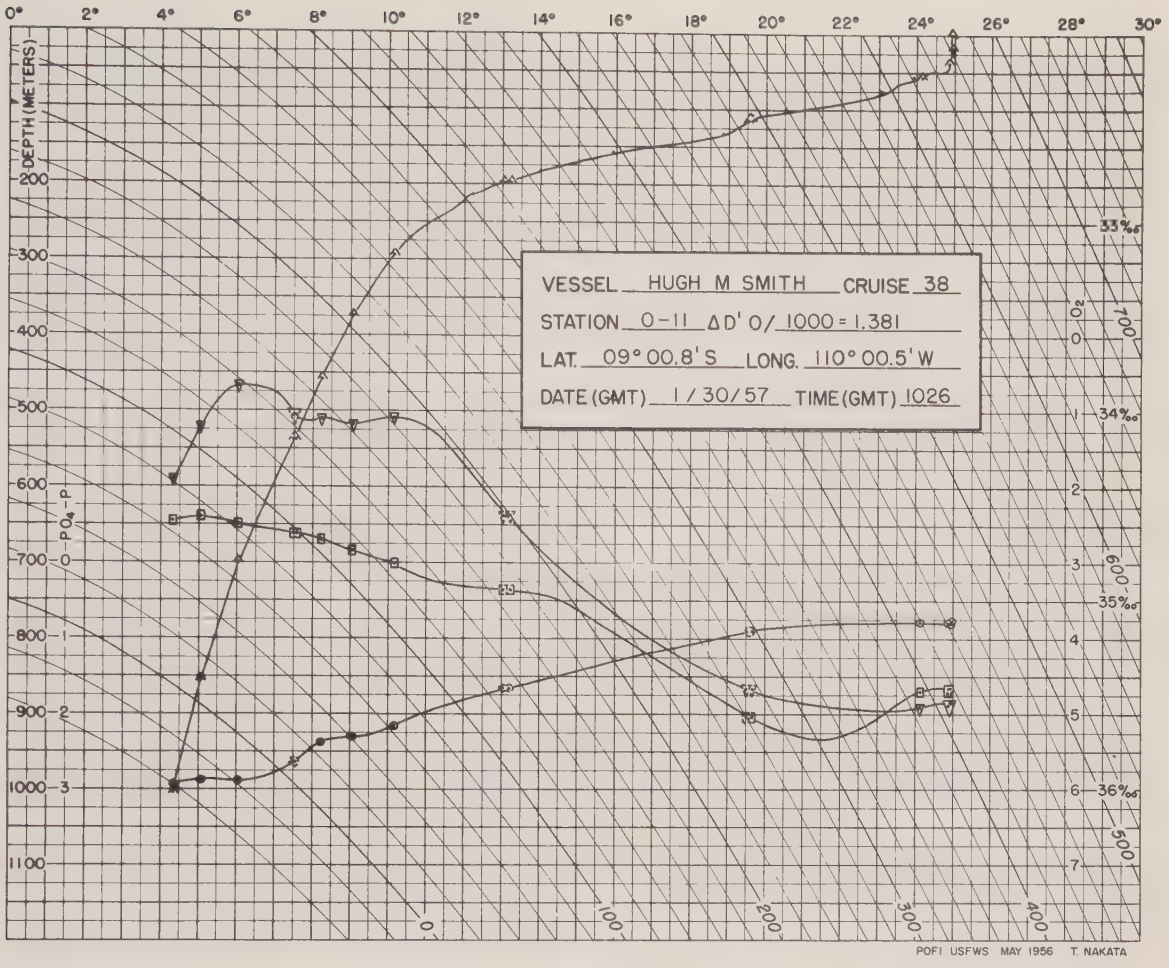
Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.32	34.90	440.5	4.89	0.94
23	24.26	34.90	438.8	4.94	0.94
42	24.18	34.90	436.5	4.92	1.00
64	23.03	34.96	400.0	4.97	0.88
102*	17.27	35.12	243.3	4.14	1.19
153*	13.18	34.97	168.2	0.64	2.05
226*	12.35	34.90	157.7	0.58	2.09
300*	11.60	34.87	146.5	0.50	2.16
300*	11.68	34.87	147.7	-	-
369*	10.52	34.81	132.1	0.74	1.98
369*	10.58	34.81	133.2	-	-
439*	9.36	34.74	118.7	0.17	2.53
439*	9.41	34.74	119.5	-	-
577	7.38	34.65	96.3	0.46	2.46
717	5.94	34.58	83.0	0.97	2.52
865	5.00	34.56	73.6	1.92	2.65

* Depths questionable


VESSEL HUGH M SMITH CRUISE 38
STATION 0-10 ΔD' O/ 1000 = 1.393
LAT. 06° 58.1' S LONG. 109° 55.8' W
DATE(GMT) 1/29/57 TIME(GMT) 2131
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

Weather: 02, cloud coverage 3. Wind: 120°, 12 kt. Sea: 3-5 ft. Wire angle: 24°.
BT slide: 95. Dry bulb: 76.9°F. Wet bulb: 72.0°F. Barometric pressure: 1011 mb.

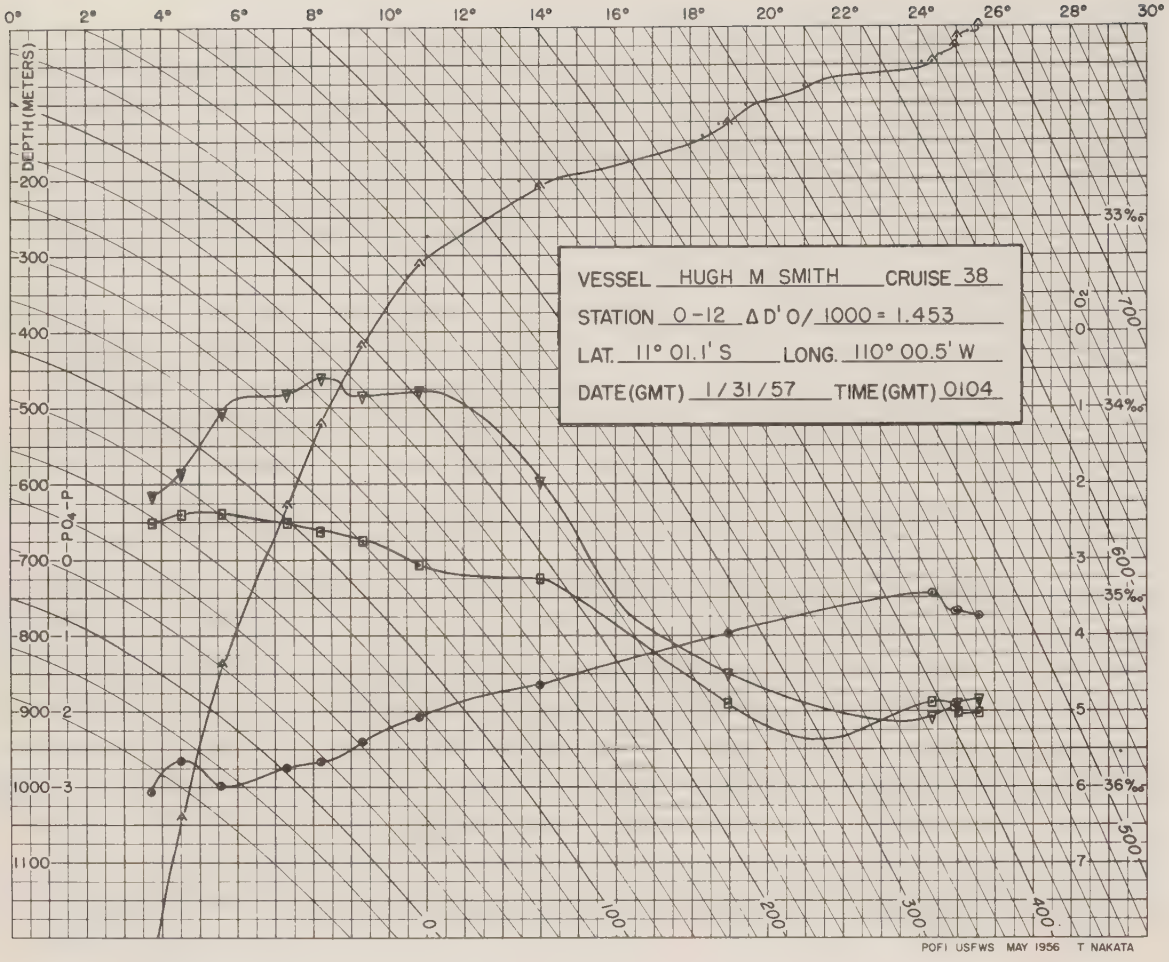
Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	25.13	34.97	458.8	4.84	0.94
39	24.16	35.37	402.2	5.01	0.79
78	23.01	35.55	356.9	4.87	0.86
116	16.33	35.16	219.7	2.05	1.75
170	12.51	34.90	160.8	0.19	2.39
233	11.66	34.87	147.4	0.50	2.35
350	10.36	34.78	131.5	0.25	2.09
462	9.22	34.72	117.9	0.31	2.27
579	7.72	34.61	104.0	0.48	2.58
692	6.64	34.60	90.3	0.63	2.81
923	5.08	34.56	74.4	1.49	3.02
1144	4.26	34.56	65.9	1.94	2.91
1358	3.72	34.58	59.2	2.08	2.84



Weather: 02, cloud coverage 1. Wind: 150°, 10 kt. Sea: 1-3 ft. Wire angle: 04°.
BT slide: 99. Dry bulb: 75.4°F. Wet bulb: 70.5°F. Barometric pressure: 1011 mb.

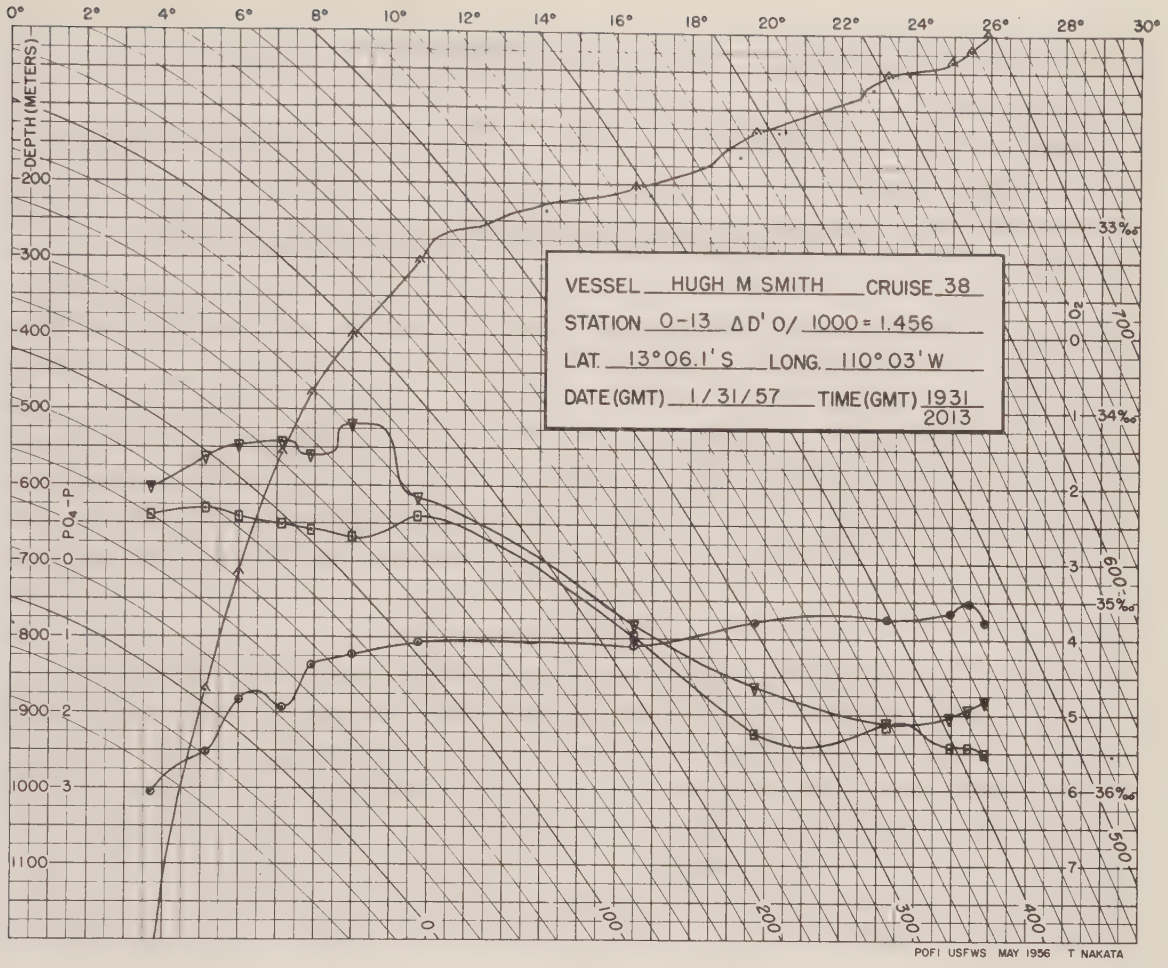
Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.92	35.46	417.4	4.84	0.79
17	24.96	35.46	418.8	4.85	0.76
38	24.89	35.48	415.0	4.87	0.79
55	24.16	35.48	394.3	4.90	0.79
114*	19.53	35.62	261.0	4.67	0.90
114*	19.64	35.62	264.0	-	-
199*	13.05	34.94	168.0	2.38	1.68
199*	13.21	34.94	171.0	-	-
294*	10.17	34.81	126.2	1.08	2.18
374	9.05	34.74	113.8	1.18	2.31
457	8.22	34.67	106.7	1.10	2.38
537	7.50	34.65	97.9	1.05	2.65
537	7.55	34.65	98.6	-	-
700	6.06	34.60	82.8	0.66	2.89
855	5.08	34.56	74.4	1.21	2.89
1005	4.36	34.58	65.4	1.89	2.93

* Depths questionable


VESSEL HUGH M SMITH CRUISE 38
STATION 0-12 ΔD' O/ 1000 = 1.453
LAT. 11° 01.1' S LONG. 110° 00.5' W
DATE(GMT) 1/31/57 TIME(GMT) 0104
DEPTH (METERS)
P-PO4-P
POFI USFWS MAY 1956 T NAKATA

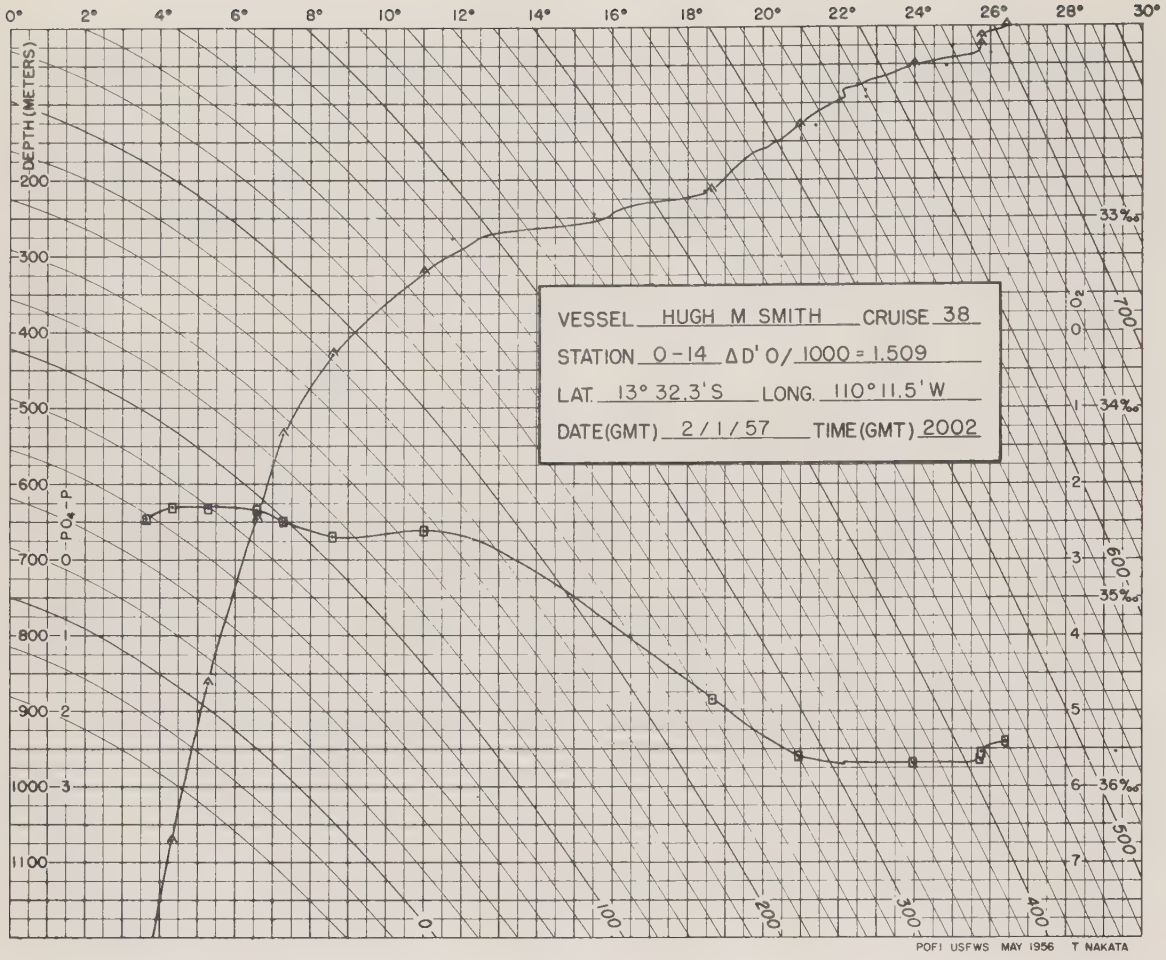
Weather: 02, cloud coverage 1. Wind: 140°, 04 kt. Sea: 1-3 ft. Wire angle: 14°.
BT slide: 104. Dry bulb: 78.2°F. Wet bulb: 71.2°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	25.60	35.61	426.7	4.84	0.72
15	25.04	35.61	410.5	4.90	0.68
26	24.92	35.57	409.5	4.92	0.68
46	24.38	35.55	395.3	5.07	0.43
128	18.98	35.53	254.3	4.50	0.97
210	14.03	34.90	190.3	1.96	1.64
312	10.82	34.83	135.8	0.76	2.09
420	9.32	34.70	120.8	0.82	2.40
522	8.22	34.65	108.2	0.60	2.65
629	7.32	34.61	98.5	0.80	2.73
838	5.60	34.56	80.6	1.05	2.99
1041	4.56	34.56	69.0	1.85	2.65
1249	3.76	34.61	57.3	2.14	3.09


VESSEL HUGH M SMITH CRUISE 38
STATION 0-13 ΔD' O/ 1000 = 1.456
LAT. 13°06.1' S LONG. 110°03' W
DATE (GMT) 1/31/57 TIME (GMT) 1931 2013
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

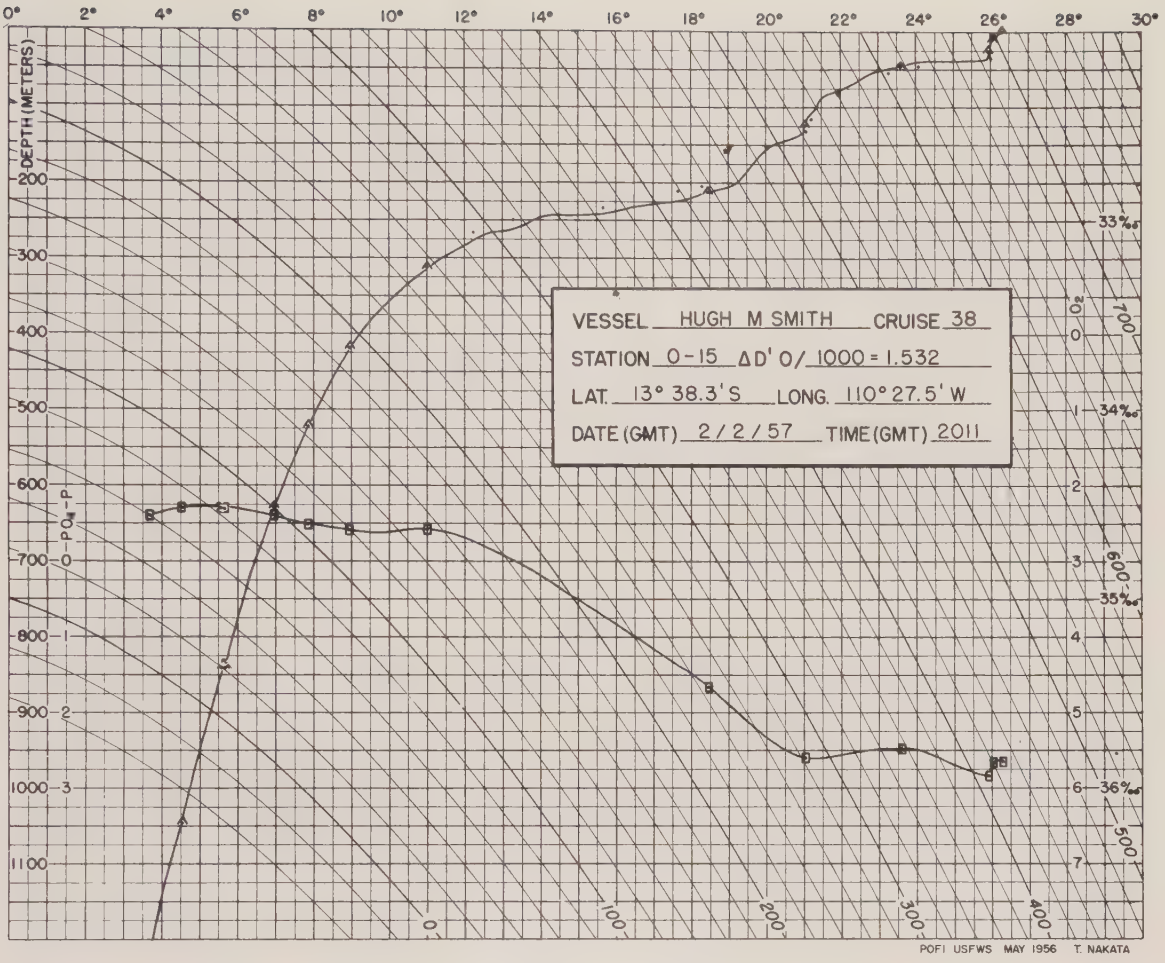
Weather: 02, cloud coverage 1. Wind: 140°, 03 kt. Sea: < 1 ft. Wire angle: 0°, 0°.
BT slide: 108. Dry bulb: 79.3°F. Wet bulb: 70.9°F. Barometric pressure: 1012 mb.

	Depth, m.	T, °C.	S, °/oo	δ t, cl. /ton	O_2, ml. /L.	PO_4-P, µg at. /L.
	0	25.89	35.81	421.0	4.79	0.76
	20	25.43	35.77	410.3	4.91	0.51
	35	24.96	35.77	396.3	5.02	0.64
	55	23.27	35.64	357.4	5.12	0.72
	130	19.72	35.70	259.8	4.63	0.79
	205	16.50	35.19	221.0	3.82	1.09
	305	10.78	34.56	154.8	2.16	1.06
	404	9.00	34.67	118.2	1.18	1.22
	479	7.91	34.63	105.1	1.59	1.37
	559	7.18	34.61	96.5	1.42	1.92
	716	6.00	34.56	85.1	1.47	1.83
I	872	5.14	34.52	78.3	1.62	2.52
II	1301	3.68	34.56	60.3	2.03	3.05


VESSEL HUGH M SMITH CRUISE 38
STATION 0-14 ΔD' O/ 1000 = 1.509
LAT. 13° 32.3' S LONG. 110° 11.5' W
DATE(GMT) 2/1/57 TIME(GMT) 2002
DEPTH (METERS)
PO4-P
POF! USFWS MAY 1956 T NAKATA

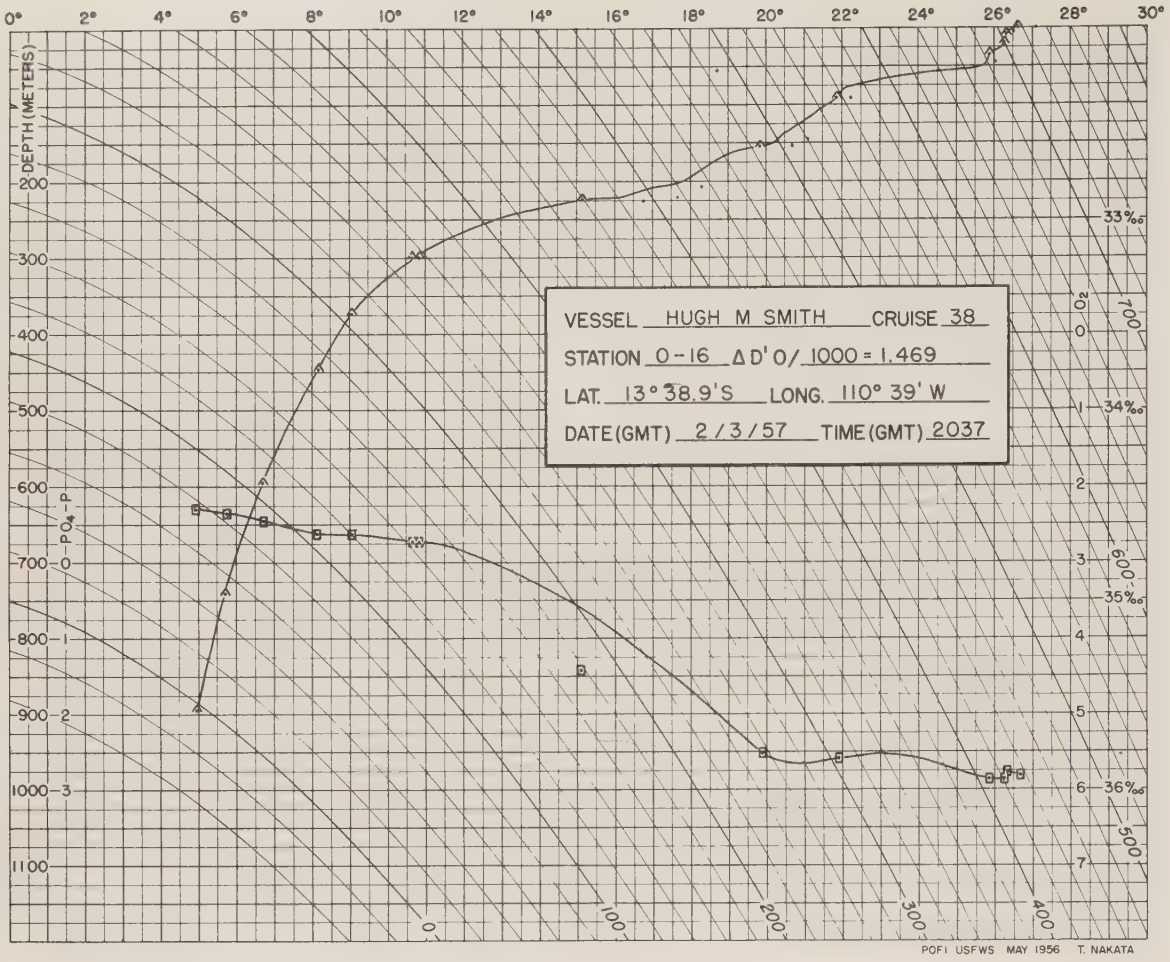
Weather: 02, cloud coverage 6. Wind: 080°, 08 kt. Sea: 1-3 ft. Wire angle: < 05°.
BT slide: 111. Dry bulb: 79.0°F. Wet bulb: 74.0°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.40	35.77	439.0	-	-
16	25.78	35.82	417.0	-	-
26	25.74	35.86	412.7	-	-
52	23.98	35.88	360.4	-	-
130	20.96	35.84	281.3	-	-
213	18.66	35.53	246.4	-	-
320	11.02	34.65	152.3	-	-
430	8.60	34.67	112.2	-	-
536	7.30	34.60	98.8	-	-
647	6.60	34.54	94.3	-	-
862	5.30	34.52	80.0	-	-
1070	4.33	34.52	69.7	-	-
1280	3.62	34.58	58.3	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-15 ΔD' O/ 1000 = 1.532
LAT. 13° 38.3' S LONG. 110° 27.5' W
DATE (GMT) 2/2/57 TIME (GMT) 2011
DEPTH (METERS)
O-PO4-P
POFI USFWS MAY 1956 T. NAKATA

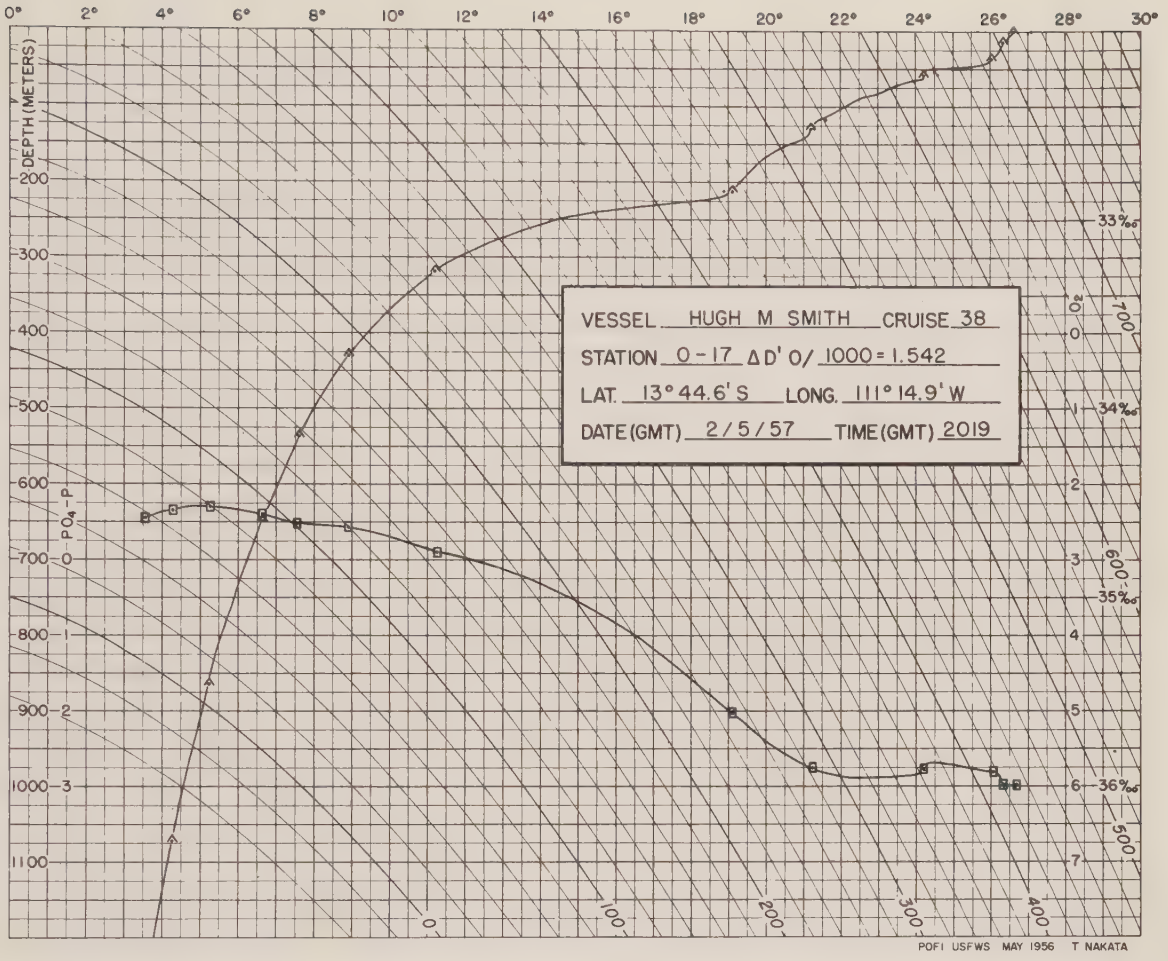
Weather: 02, cloud coverage 2. Wind: 070°, 12 kt. Sea: 3-5 ft. Wire angle: 14°
BT slide: 118. Dry bulb: 78.4°F. Wet bulb: 73.4°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.30	35.86	429.5	-	-
10	26.06	35.86	422.0	-	-
26	25.92	35.93	413.0	-	-
46	23.60	35.79	356.0	-	-
123	21.04	35.84	283.5	-	-
211	18.48	35.46	247.1	-	-
313	11.01	34.63	153.6	-	-
419	8.98	34.63	120.8	-	-
523	7.87	34.61	105.8	-	-
630	6.97	34.56	97.3	-	-
840	5.67	34.52	84.3	-	-
840	5.60	34.52	83.6	-	-
1044	4.54	34.52	71.8	-	-
1251	3.65	34.56	60.0	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-16 ΔD'O/1000 = 1.469
LAT. 13° 38.9'S LONG. 110° 39' W
DATE(GMT) 2/3/57 TIME(GMT) 2037
DEPTH (METERS)
PO4-P
O2
POFI USFWS MAY 1956 T. NAKATA

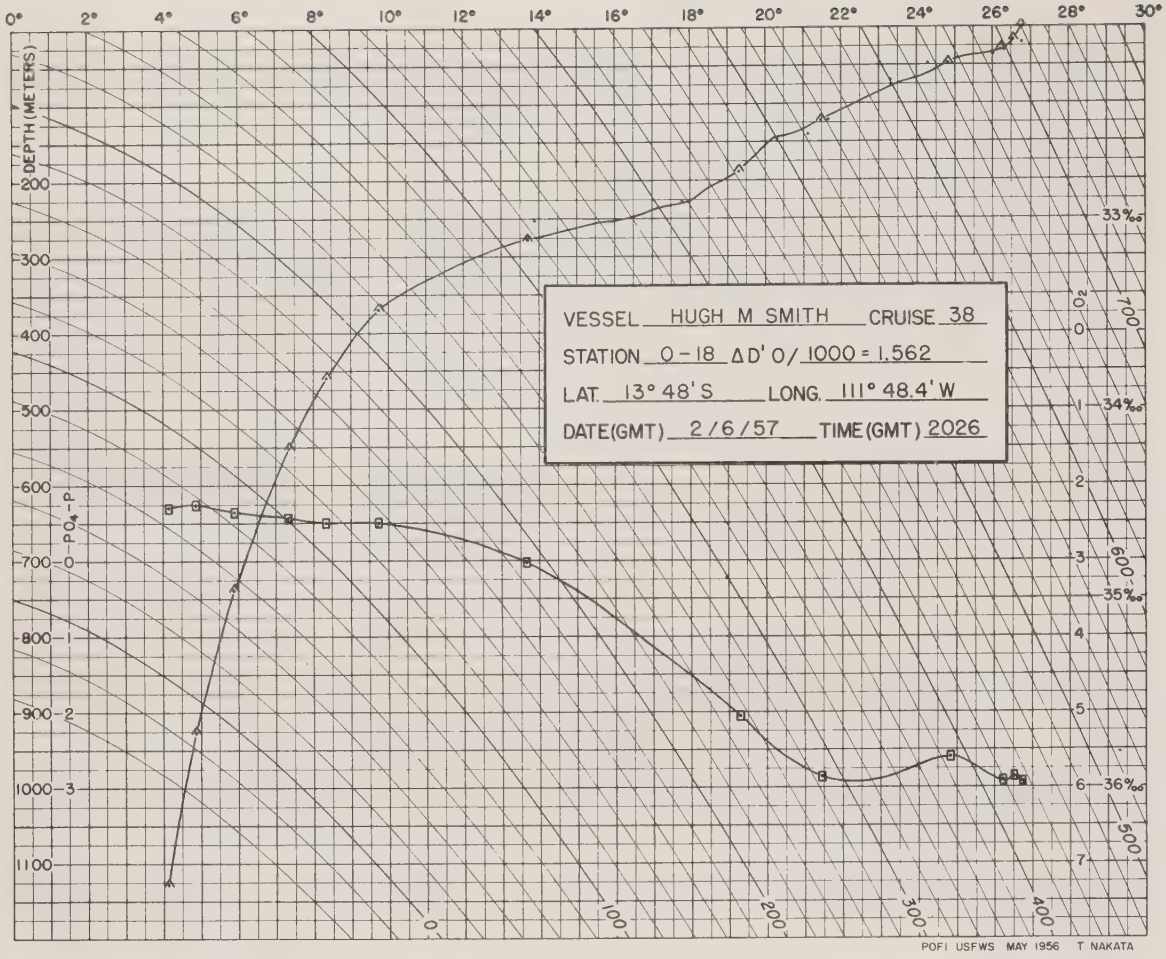
Weather: 02, cloud coverage 2. Wind: 080°, 05 kt. Sea: 1-3 ft. Wire angle: 09°.
BT slide: 120. Dry bulb: 80.0°F. Wet bulb: 72.8°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.63	35.93	434.4	-	-
8	26.30	35.91	425.9	-	-
19	26.28	35.95	422.5	-	-
35	25.87	35.95	410.2	-	-
91	21.86	35.84	304.8	-	-
154	19.86	35.81	255.4	-	-
226	15.07	35.37 P	177.0	-	-
300	10.64	34.69	143.0	-	-
300	10.83	34.69	146.2	-	-
372	9.04	34.65	120.3	-	-
445	8.19	34.65	107.6	-	-
593	6.72	34.58	92.7	-	-
740	5.74	34.54	83.7	-	-
895	4.94	34.52	75.9	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-17 ΔD' O/ 1000 = 1.542
LAT. 13°44.6' S LONG. 111°14.9' W
DATE (GMT) 2/5/57 TIME (GMT) 2019
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

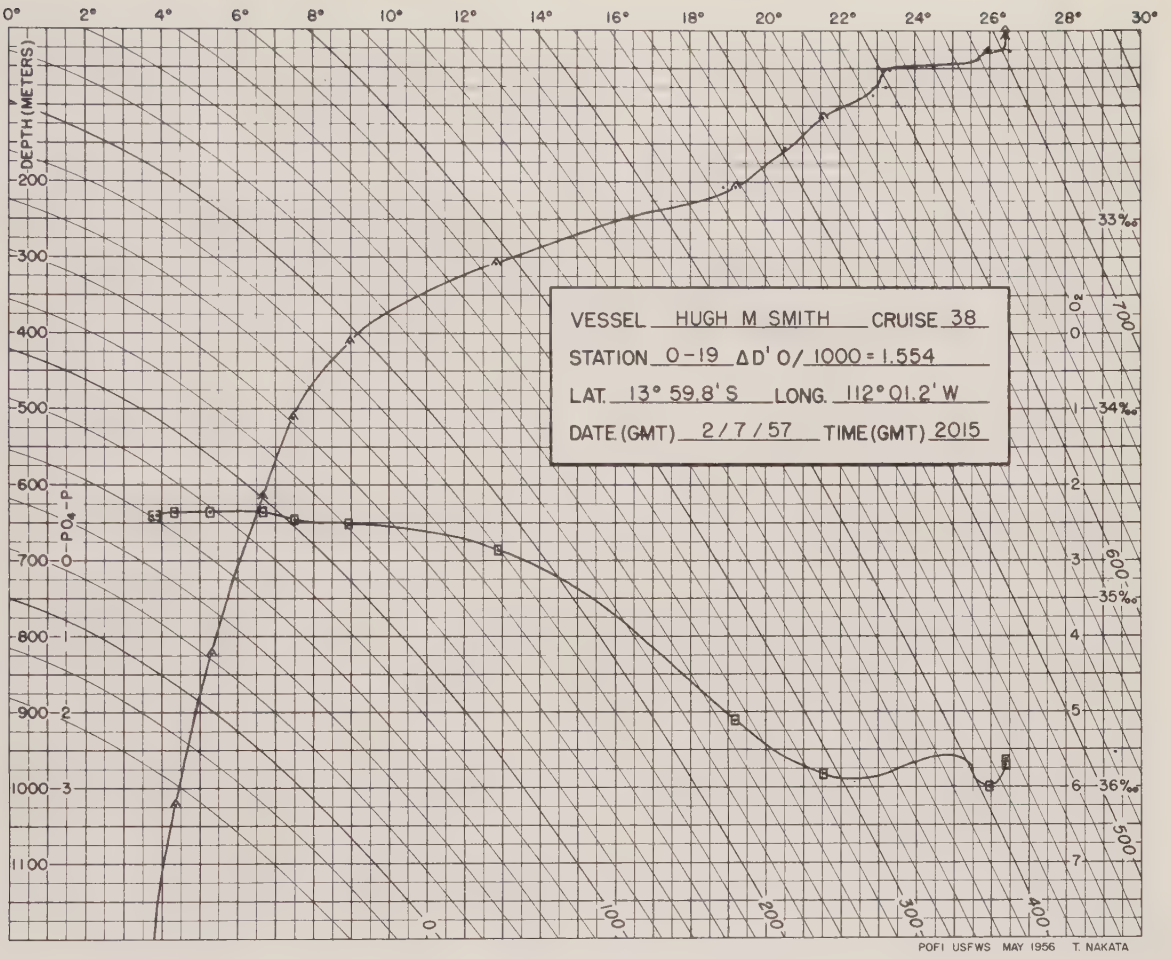
Weather: 02, cloud coverage 3. Wind: 080°, 11 kt. Sea: 1-3 ft. Wire angle: 03°.
BT slide: 123. Dry bulb: 80.4°F. Wet bulb: 75.0°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.65	35.99	430.8	-	-
15	26.36	35.99	421.8	-	-
36	26.05	35.93	417.0	-	-
57	24.24	35.91	365.6	-	-
129	21.26	35.90	284.8	-	-
212	19.10	35.61	251.2	-	-
319	11.21	34.76	147.7	-	-
430	8.91	34.63	119.8	-	-
536	7.60	34.61	102.3	-	-
647	6.63	34.56	93.2	-	-
863	5.26	34.52	79.6	-	-
1071	4.27	34.54	67.5	-	-
1281	3.58	34.58	57.8	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-18 ΔD' O/ 1000 = 1.562
LAT. 13° 48' S LONG. 111° 48.4' W
DATE(GMT) 2/6/57 TIME(GMT) 2026
DEPTH (METERS)
POFI USFWS MAY 1956 T NAKATA

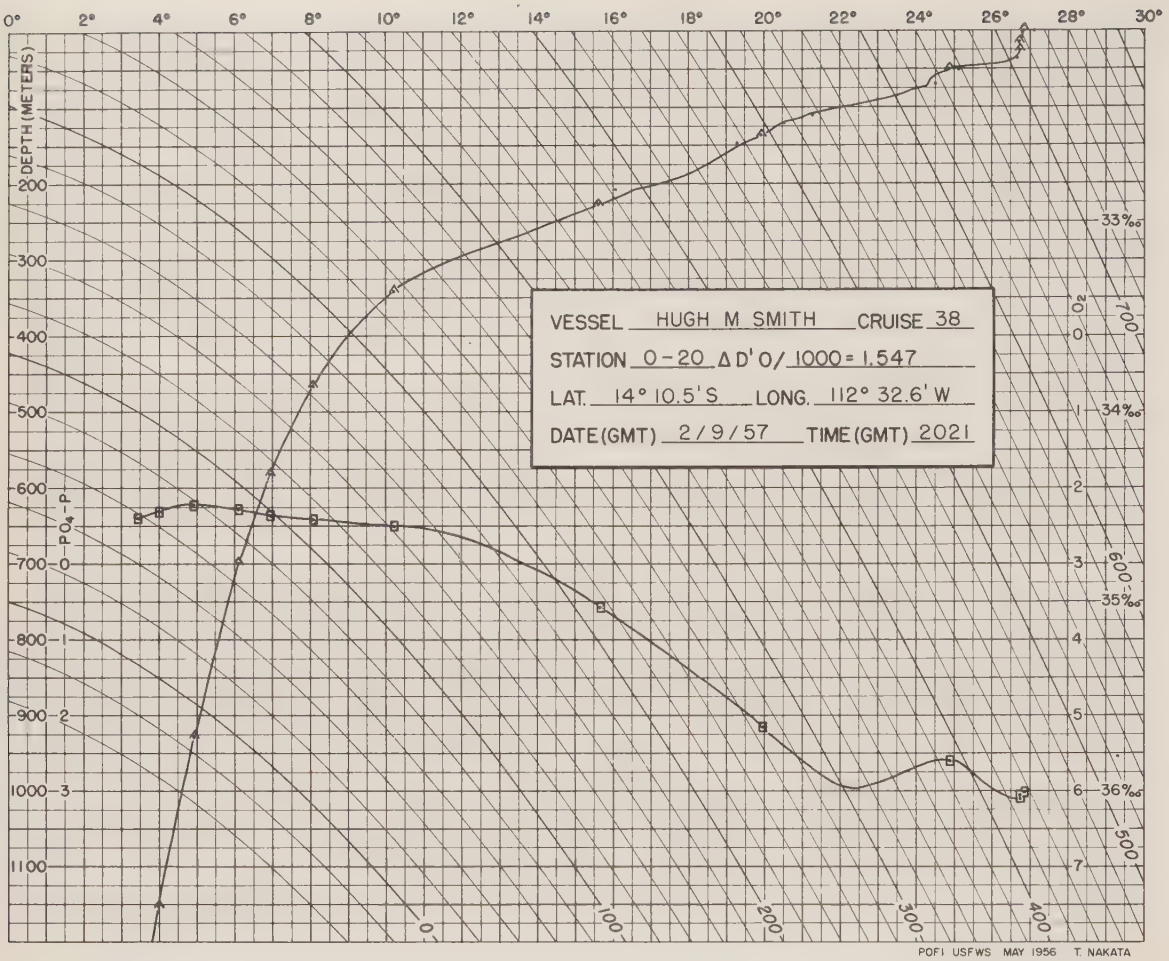
Weather: 02, cloud coverage 2. Wind: 070°, 12 kt. Sea: 3-5 ft. Wire angle: 31°.
BT slide: 126. Dry bulb: 80.0°F. Wet bulb: 73.8°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.76	35.97	435.2	-	-
17	26.55	35.95	430.5	-	-
30	26.22	35.97	419.0	-	-
47	24.82	35.84	387.4	-	-
122	21.47	35.95	286.8	-	-
188	19.30	35.62	255.3	-	-
276	13.72	34.81	190.5	-	-
368	9.78	34.60	135.7	-	-
457	8.36	34.60	113.8	-	-
551	7.36	34.58	101.2	-	-
738	5.90	34.54	85.5	-	-
926	4.87	34.51	75.9	-	-
1127	4.15	34.52	67.7	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-19 ΔD' O/ 1000 = 1.554
LAT. 13° 59.8' S LONG. 112° 01.2' W
DATE (GMT) 2/7/57 TIME (GMT) 2015
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

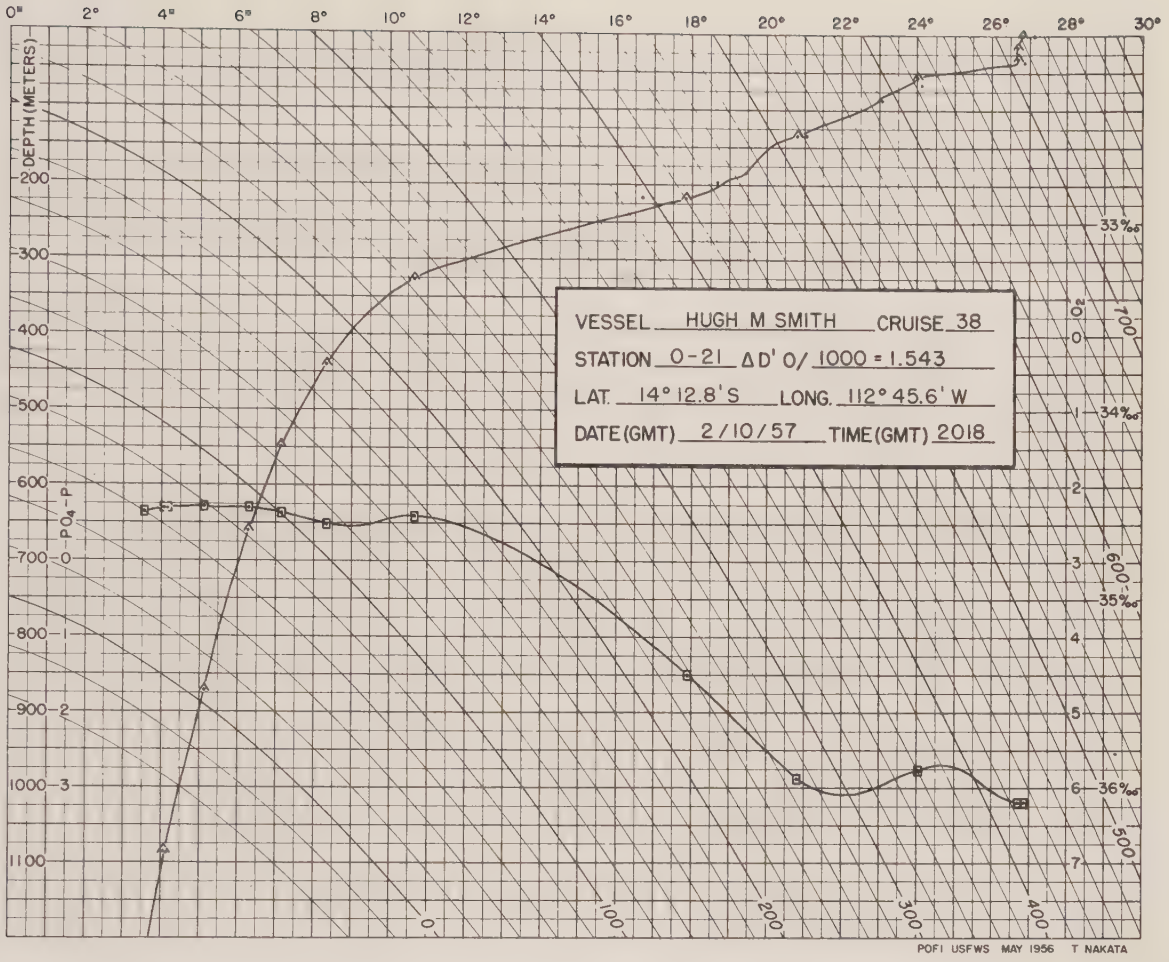
Weather: 15, cloud coverage 7. Wind: 090°, 18 kt. Sea: 3-5 ft. Wire angle: 20°.
BT slide: 128. Dry bulb: 77.9°F. Wet bulb: 73.3°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.40	35.88	431.2	-	-
5	26.38	35.86	432.2	-	-
10	26.41	35.88	431.3	-	-
30	25.92	36.00	408.0	-	-
115	21.54	35.93	290.0	-	-
206	19.20	35.64	251.5	-	-
307	12.87	34.74	179.1	-	-
412	8.95	34.60	122.7	-	-
512	7.46	34.58	102.5	-	-
617	6.66	34.54	95.0	-	-
822	5.30	34.54	78.6	-	-
1022	4.38	34.54	68.7	-	-
1227	3.83	34.56	61.8	-	-
1227	3.74	34.56	60.8	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-20 ΔD' O/ 1000 = 1.547
LAT. 14° 10.5' S LONG. 112° 32.6' W
DATE (GMT) 2/9/57 TIME (GMT) 2021
DEPTH (METERS)
PO4-P
O2
POFI USFWS MAY 1956 T. NAKATA

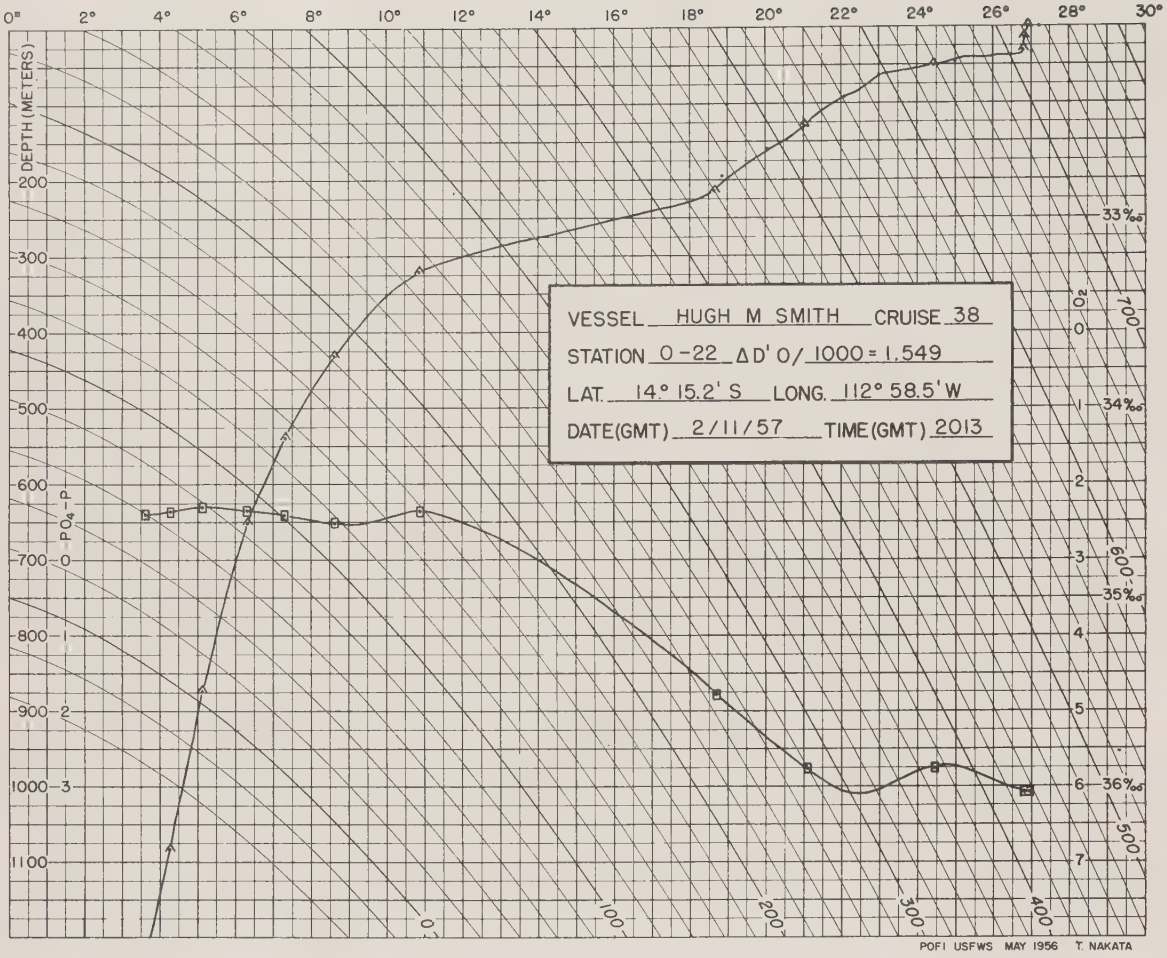
Weather: 02, cloud coverage 2. Wind: 090°, 14 kt. Sea: 3-5 ft. Wire angle: 15°.
BT slide: 131. Dry bulb: 79.8°F. Wet bulb: 73.2°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.84	36.00	435.6	-	-
13	26.76	36.02	431.8	-	-
25	26.74	36.04	429.8	-	-
52	24.88	35.84	388.8	-	-
138	19.94	35.66	268.5	-	-
227	15.66	35.03	214.3	-	-
342	10.22	34.60	142.7	-	-
465	8.10	34.56	113.0	-	-
582	6.96	34.54	98.7	-	-
699	6.17	34.51	90.8	-	-
927	4.93	34.49	78.2	-	-
1153	4.00	34.52	66.4	-	-
1367	3.44	34.56	58.2	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-21 ΔD' O/ 1000 = 1.543
LAT. 14° 12.8' S LONG. 112° 45.6' W
DATE (GMT) 2/10/57 TIME (GMT) 2018
DEPTH (METERS)
POFI USFWS MAY 1956 T NAKATA

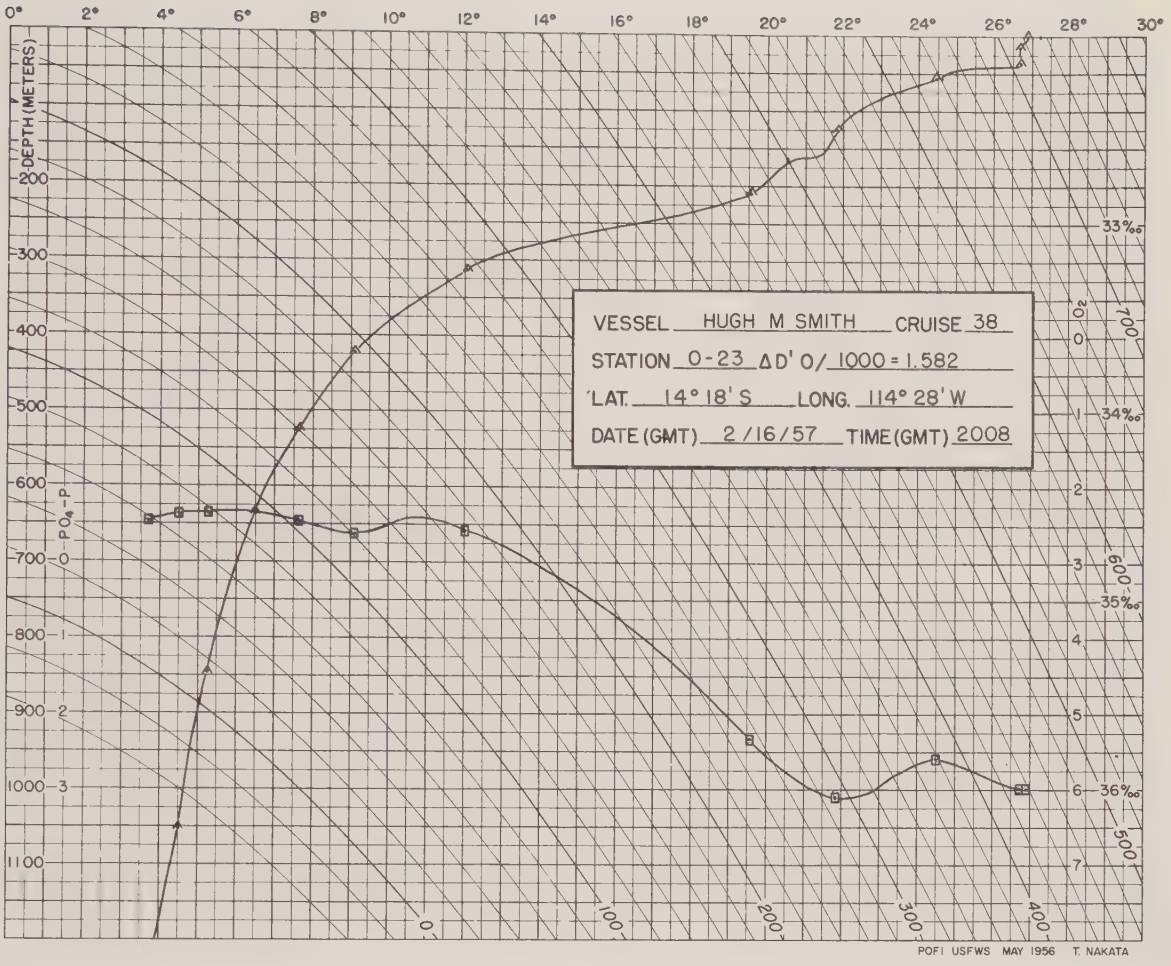
Weather: 02, cloud coverage 3. Wind: 090°, 13 kt. Sea: 3-5 ft. Wire angle: 23°.
BT slide: 133. Dry bulb: 80.0°F. Wet bulb: 73.5°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.84	36.08	430.0	-	-
15	26.70	36.08	425.6	-	-
30	26.71	36.08	425.7	-	-
55	24.06	35.90	361.1	-	-
133	20.82	35.95	269.9	-	-
218	17.89	35.39	238.2	-	-
326	10.66	34.56	152.8	-	-
440	8.36	34.60	113.8	-	-
549	7.18	34.54	101.5	-	-
658	6.32	34.52	92.2	-	-
871	5.13	34.51	79.0	-	-
1085	4.10	34.52	67.3	-	-
1085	4.15	34.52	67.9	-	-
1290	3.54	34.54	60.7	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-22 ΔD' O/1000 = 1.549
LAT. 14° 15.2' S LONG. 112° 58.5' W
DATE(GMT) 2/11/57 TIME(GMT) 2013
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

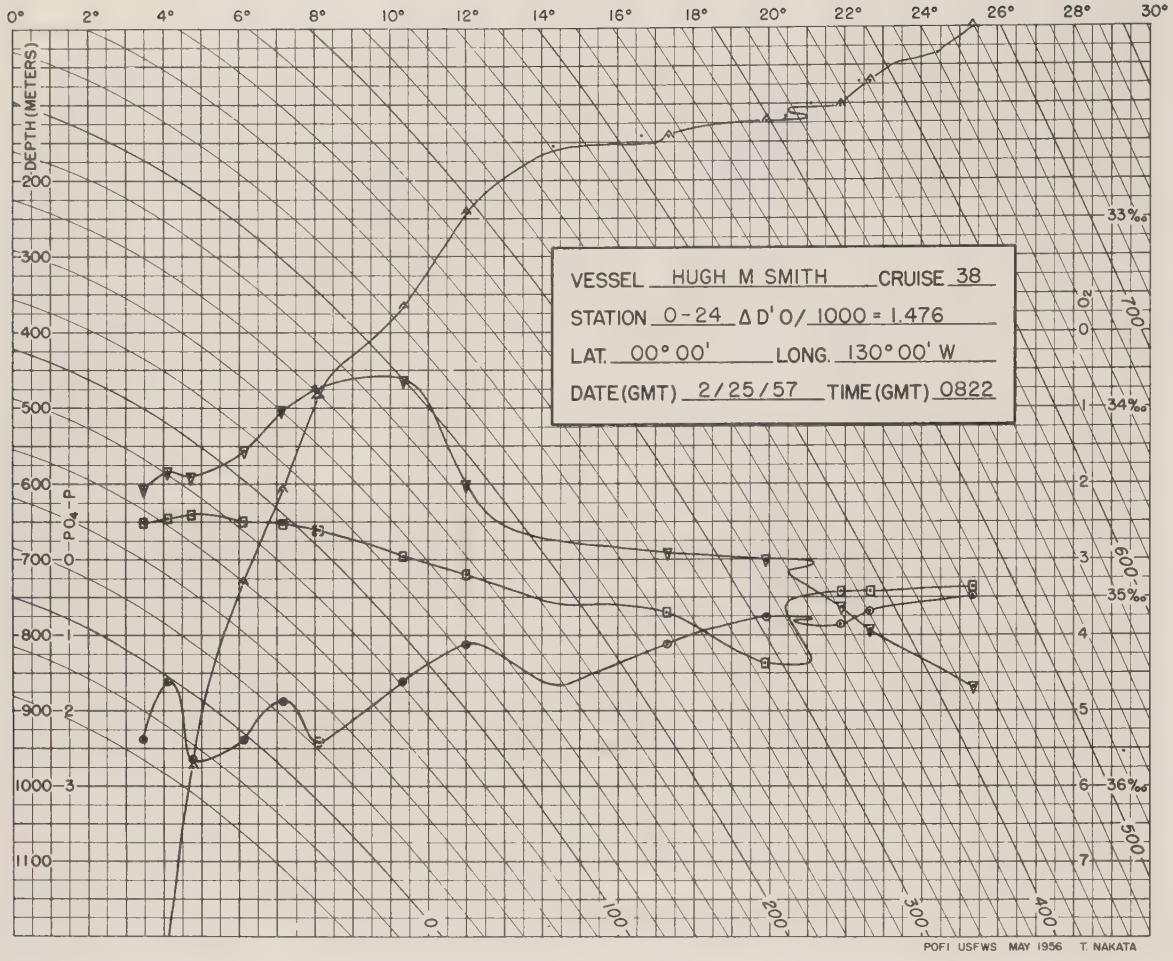
Weather: 03, cloud coverage 3. Wind: 070°, 11 kt. Sea: 3-5 ft. Wire angle: 04°.
BT slide: 135. Dry bulb: 79.6°F. Wet bulb: 73.2°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.96	36.02	437.7	-	-
15	26.82	36.02	433.3	-	-
31	26.82	36.02	433.3	-	-
52	24.44	35.90	372.2	-	-
130	21.06	35.90	279.3	-	-
214	18.68	35.50	249.2	-	-
320	10.89	34.54	158.1	-	-
432	8.62	34.61	117.1	-	-
539	7.31	34.56	102.1	-	-
652	6.34	34.54	91.0	-	-
870	5.16	34.52	78.4	-	-
1083	4.26	34.54	67.4	-	-
1300	3.60	34.56	59.7	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-23 ΔD' O/ 1000 = 1.582
LAT. 14° 18' S LONG. 114° 28' W
DATE (GMT) 2/16/57 TIME (GMT) 2008
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

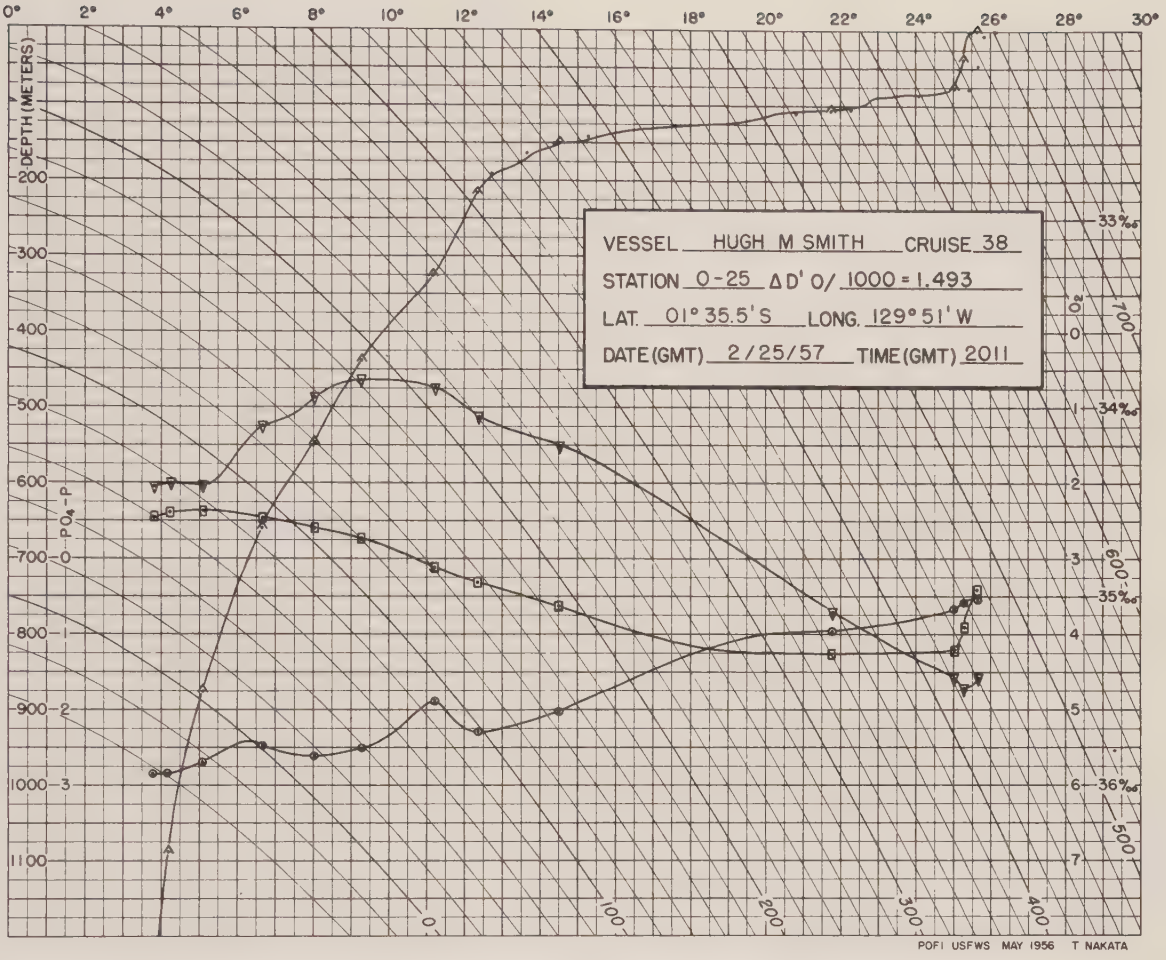
Weather: 01, cloud coverage 2. Wind: 080°, 12 kt. Sea: 3-5 ft. Wire angle: 14°.
BT slide: 140. Dry bulb: 80.7°F. Wet bulb: 73.6°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.88	36.00	437.0	-	-
15	26.71	35.99	432.2	-	-
35	26.70	35.99	432.0	-	-
56	24.48	35.84	377.4	-	-
127	21.82	36.04	289.2	-	-
210	19.58	35.73	254.2	-	-
313	12.10	34.63	172.8	-	-
422	9.10	34.63	122.6	-	-
526	7.63	34.58	105.0	-	-
634	6.49	34.54	92.7	-	-
846	5.24	34.54	78.0	-	-
1051	4.47	34.54	69.6	-	-
1259	3.67	34.58	58.7	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-24 Δ D' O/ 1000 = 1.476
LAT. 00° 00' LONG. 130° 00' W
DATE (GMT) 2/25/57 TIME (GMT) 0822
DEPTH (METERS)
POFI USFWS MAY 1956 T. NAKATA

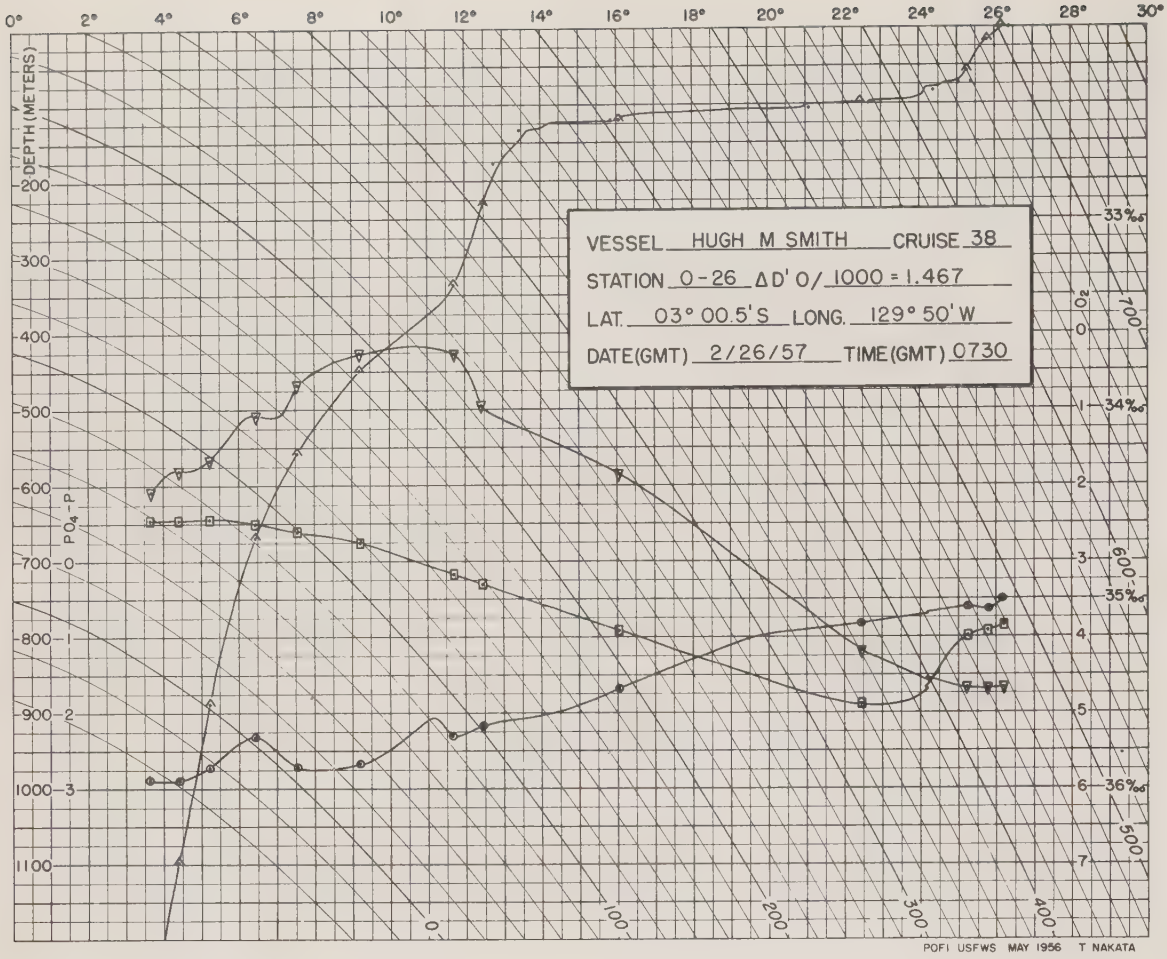
Weather: 02, cloud coverage 2. Wind: 090°, 08 kt. Sea: 1-3 ft. Wire angle: 23°.
BT slide: 147. Dry bulb: 77.8°F. Wet bulb: 74.7°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	25.37	34.94	468.0	4.69	0.48
71	22.64	34.97	388.7	3.91	0.69
102	21.89	34.97	368.5	3.62	0.84
122	19.90	35.34	290.4	2.99	0.75
142	17.34	35.08	248.0	2.91	1.12
244	12.02	34.88	153.1	2.01	1.12
367	10.35	34.78	131.4	0.62	1.62
485	8.12	34.65	106.7	0.75	2.42
485	8.07	34.65	105.9	-	-
610	7.18	34.61	96.3	1.03	1.87
730	6.13	34.60	83.8	1.55	2.38
974	4.74	34.56	70.8	1.90	2.66
1208	4.10	34.58	62.7	1.84	1.62
1429	3.46	34.61	54.6	2.06	2.37


VESSEL HUGH M SMITH CRUISE 38
STATION 0-25 ΔD' O/ 1000 = 1.493
LAT. 01° 35.5' S LONG. 129° 51' W
DATE (GMT) 2/25/57 TIME (GMT) 2011
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

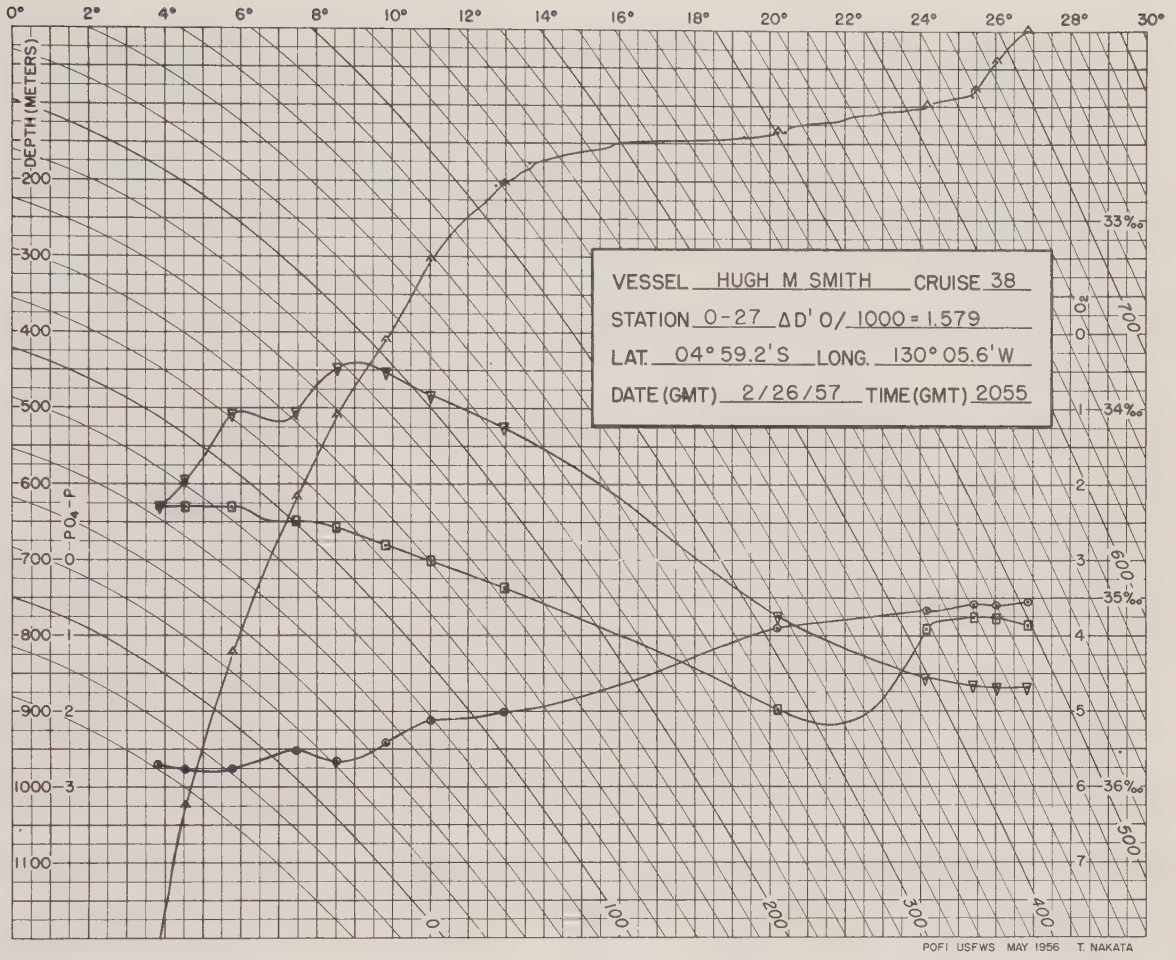
Weather: 03, cloud coverage 6. Wind: 110°, 10 kt. Sea: 1-3 ft. Wire angle: < 05°.
BT slide: 151. Dry bulb: 80.0°F. Wet bulb: 75.5°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	25.69	34.96	476.1	4.57	0.55
37	25.30	35.16	450.2	4.71	0.58
73	25.06	35.28	434.5	4.57	0.66
105	21.79	35.30	342.0	3.70	0.96
152	14.52	35.05	189.0	1.49	2.02
216	12.38	34.92	156.7	1.11	2.28
324	11.21	34.85	141.2	0.73	1.89
437	9.30	34.69	121.2	0.63	2.52
545	8.04	34.63	106.9	0.85	2.61
658	6.70	34.58	92.5	1.14	2.47
877	5.12	34.54	76.6	2.01	2.67
1089	4.22	34.56	65.6	2.02	2.86
1297	3.82	34.58	60.2	2.03	2.83


VESSEL HUGH M SMITH CRUISE 38
STATION 0-26 ΔD' O/ 1000 = 1.467
LAT. 03° 00.5' S LONG. 129° 50' W
DATE(GMT) 2/26/57 TIME(GMT) 0730
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

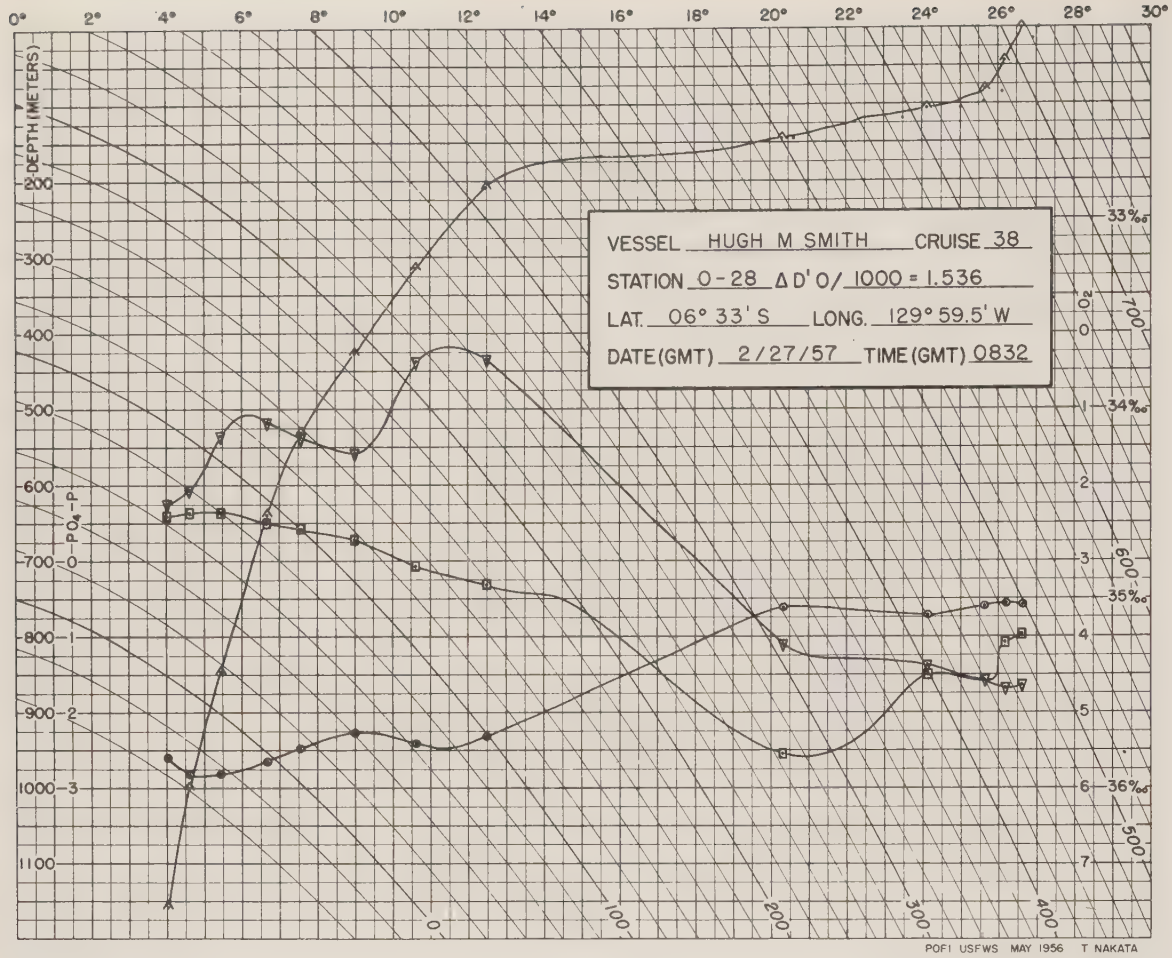
Weather: 02, cloud coverage 3. Wind: 110°, 08 kt. Sea: 1-3 ft. Wire angle: 06°.
BT slide: 154. Dry bulb: 79.2°F. Wet bulb: 75.7°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, μg at./L.
0	26.19	35.14	477.9	4.68	0.52
16	25.80	35.17	464.2	4.69	0.62
57	25.26	35.19	446.8	4.67	0.60
99	22.46	35.55	341.9	4.17	0.81
120	16.08	35.17	213.2	1.84	1.68
230	12.46	34.92	158.3	0.94	2.17
337	11.71	34.87	148.4	0.29	2.30
450	9.20	34.70	119.0	0.29	2.68
558	7.58	34.65	99.0	0.68	2.71
670	6.46	34.60	87.9	1.09	2.32
889	5.24	34.58	74.9	1.65	2.72
1098	4.42	34.58	66.3	1.80	2.90
1305	3.66	34.58	58.7	2.08	2.89


VESSEL HUGH M SMITH CRUISE 38
STATION 0-27 ΔD' O/ 1000 = 1.579
LAT. 04° 59.2' S LONG. 130° 05.6' W
DATE (GMT) 2/26/57 TIME (GMT) 2055
DEPTH (METERS)
PO4 - P
POFI USFWS MAY 1956 T. NAKATA

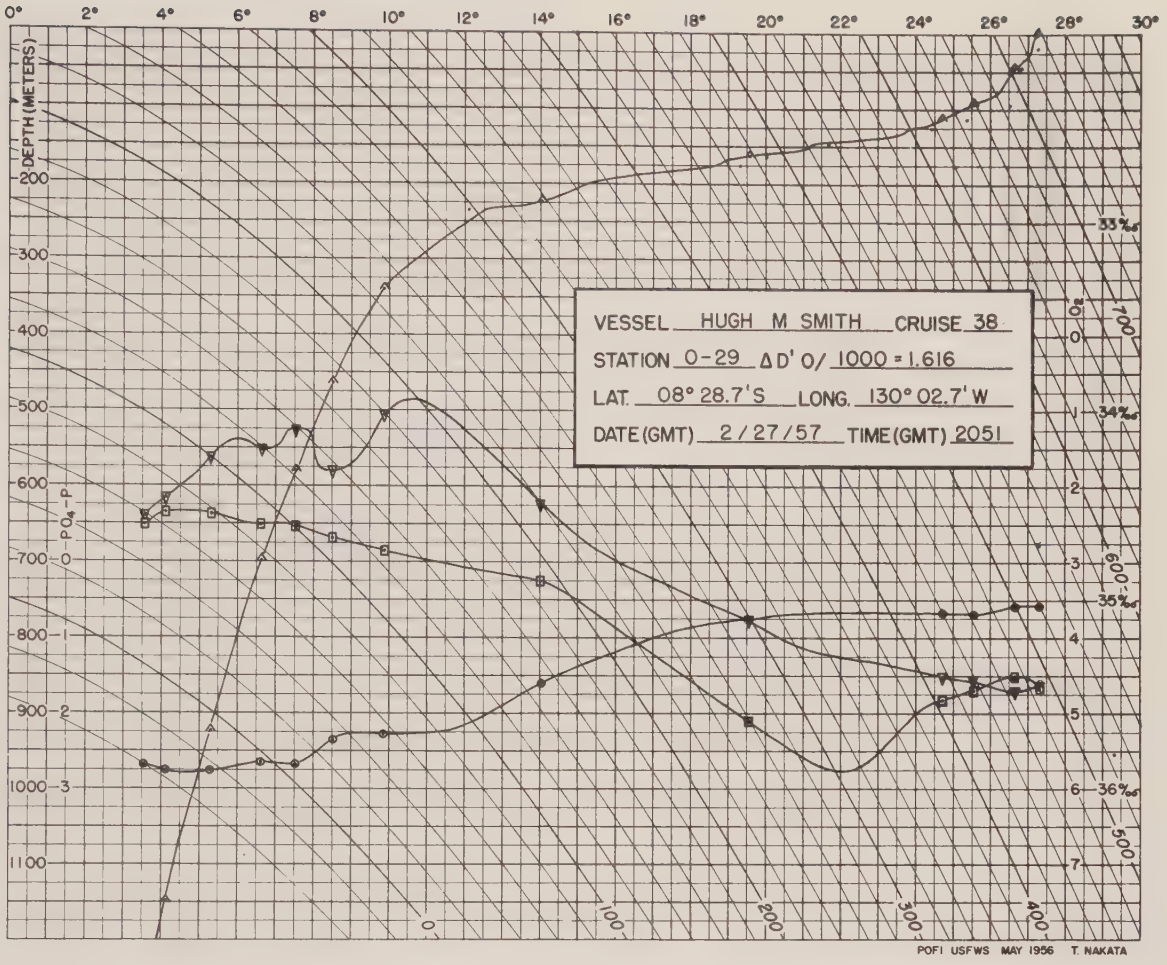
Weather: 02, cloud coverage 4. Wind: 110°, 06 kt. Sea: 1-3 ft. Wire angle: 12°.
BT slide: 157. Dry bulb: 80.2°F. Wet bulb: 74.9°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl. /ton	O_2, ml. /L.	PO_4-P, µg at. /L.
0	26.86	35.14	497.9	4.67	0.54
40	26.02	35.10	475.6	4.68	0.60
80	25.42	35.10	457.8	4.65	0.58
100	24.19	35.17	417.3	4.54	0.66
135	20.22	35.59	280.7	3.73	0.90
205	12.91	34.94	165.4	1.26	2.02
305	11.02	34.81	140.8	0.84	2.12
411	9.82	34.72	127.5	0.52	2.42
512	8.56	34.63	114.6	0.48	2.66
617	7.49	34.60	101.4	1.06	2.52
823	5.80	34.52	85.9	1.09	2.76
1023	4.57	34.52	72.2	1.95	2.76
1228	3.84	34.52	65.0	2.29	2.70


VESSEL HUGH M SMITH CRUISE 38
STATION 0-28 Δ D' O/ 1000 = 1.536
LAT. 06° 33' S LONG. 129° 59.5' W
DATE (GMT) 2/27/57 TIME (GMT) 0832
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

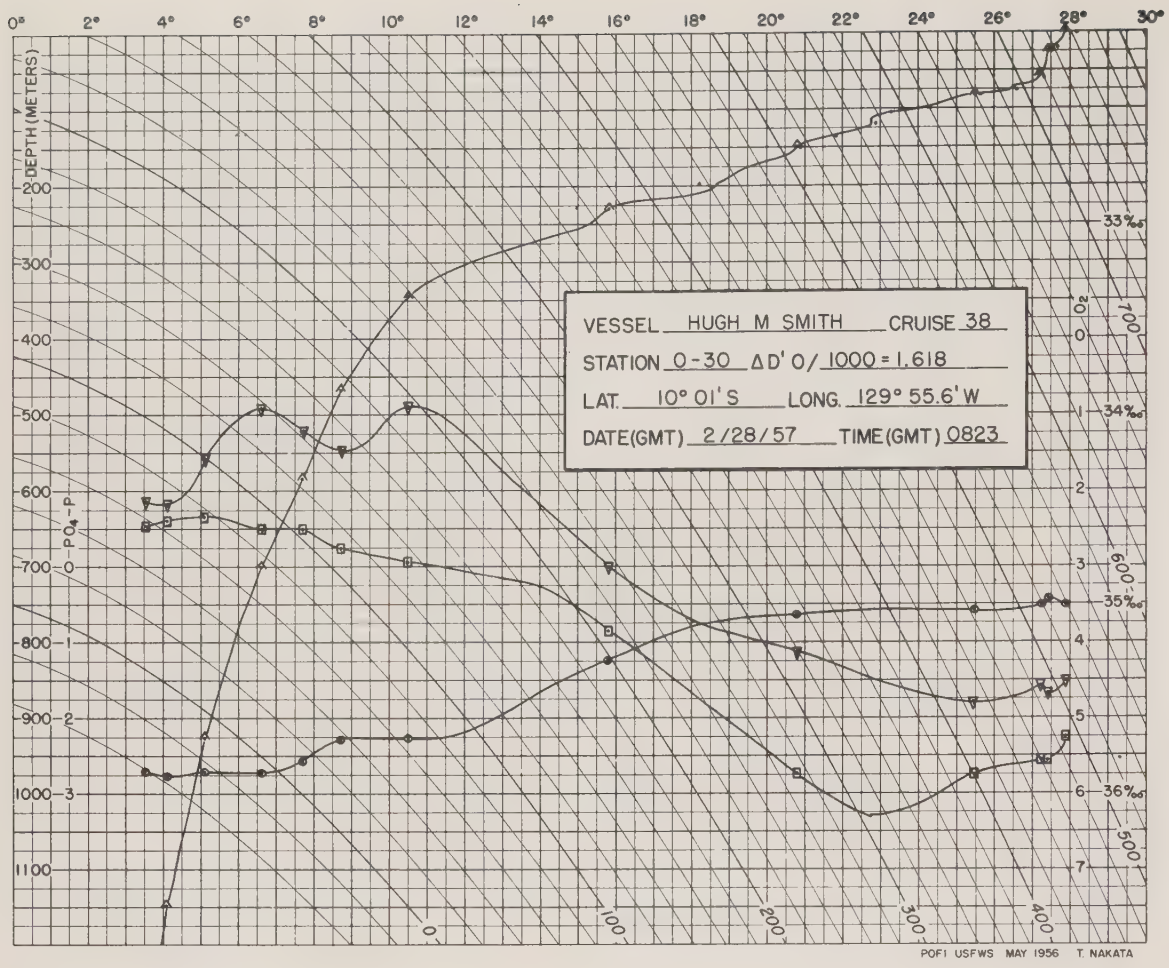
Weather: 02, cloud coverage 1. Wind: 110°, 10 kt. Sea: 1-3 ft. Wire angle: 20°.
BT slide: 160. Dry bulb: 79.3°F. Wet bulb: 75.8°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.62	35.19	487.3	4.65	0.60
43	26.18	35.23	471.3	4.69	0.56
81	25.68	35.43	441.8	4.58	0.60
105	24.17	35.41	399.4	4.39	0.71
144	20.33	35.82	266.8	4.10	0.62
210	12.48	34.92	158.6	0.32	2.32
316	10.62	34.83	132.4	0.37	2.42
426	9.00	34.69	116.7	1.58	2.28
532	7.59	34.63	100.5	1.35	2.48
638	6.70	34.60	90.9	1.17	2.66
846	5.46	34.54	80.2	1.33	2.82
1000	4.62	34.54	71.1	2.08	2.82
1158	4.08	34.56	64.0	2.24	2.60


VESSEL HUGH M SMITH CRUISE 38
STATION 0-29 ΔD' 0/ 1000 = 1.616
LAT. 08° 28.7'S LONG. 130° 02.7' W
DATE (GMT) 2/27/57 TIME (GMT) 2051
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

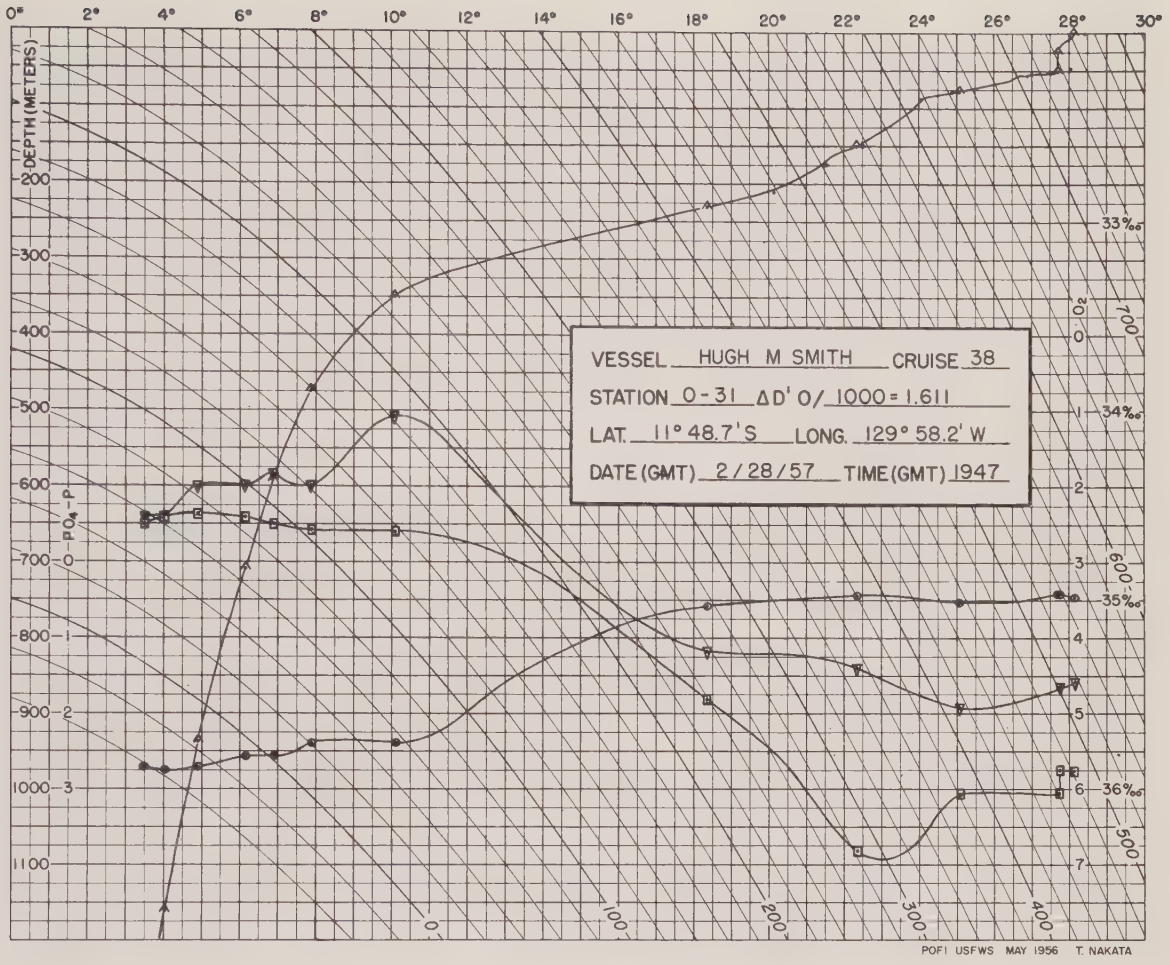
Weather: 02, cloud coverage 1. Wind: 080°, 12 kt. Sea: 1-3 ft. Wire angle: 12°.
BT slide: 163. Dry bulb: 80.3°F. Wet bulb: 75.1°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	27.30	35.46	488.4	4.62	0.58
45	26.64	35.41	472.2	4.70	0.58
91	25.56	35.48	434.8	4.57	0.68
112	24.71	35.53	406.5	4.52	0.66
163	19.59	35.64	261.0	3.75	0.74
225	14.04	34.90	190.3	2.21	1.61
340	9.88	34.74	126.7	1.05	2.29
463	8.51	34.67	111.0	1.77	2.35
580	7.56	34.61	89.4	1.25	2.66
697	6.64	34.61	89.4	1.52	2.64
923	5.30	34.54	78.5	1.62	2.76
1148	4.12	34.54	66.2	2.15	2.76
1362	3.58	34.60	56.3	2.38	2.66


VESSEL HUGH M SMITH CRUISE 38
STATION 0-30 ΔD' 0/1000 = 1.618
LAT. 10° 01' S LONG. 129° 55.6' W
DATE(GMT) 2/28/57 TIME(GMT) 0823
DEPTH (METERS)
P-PO4
POF1 USFWS MAY 1956 T. NAKATA

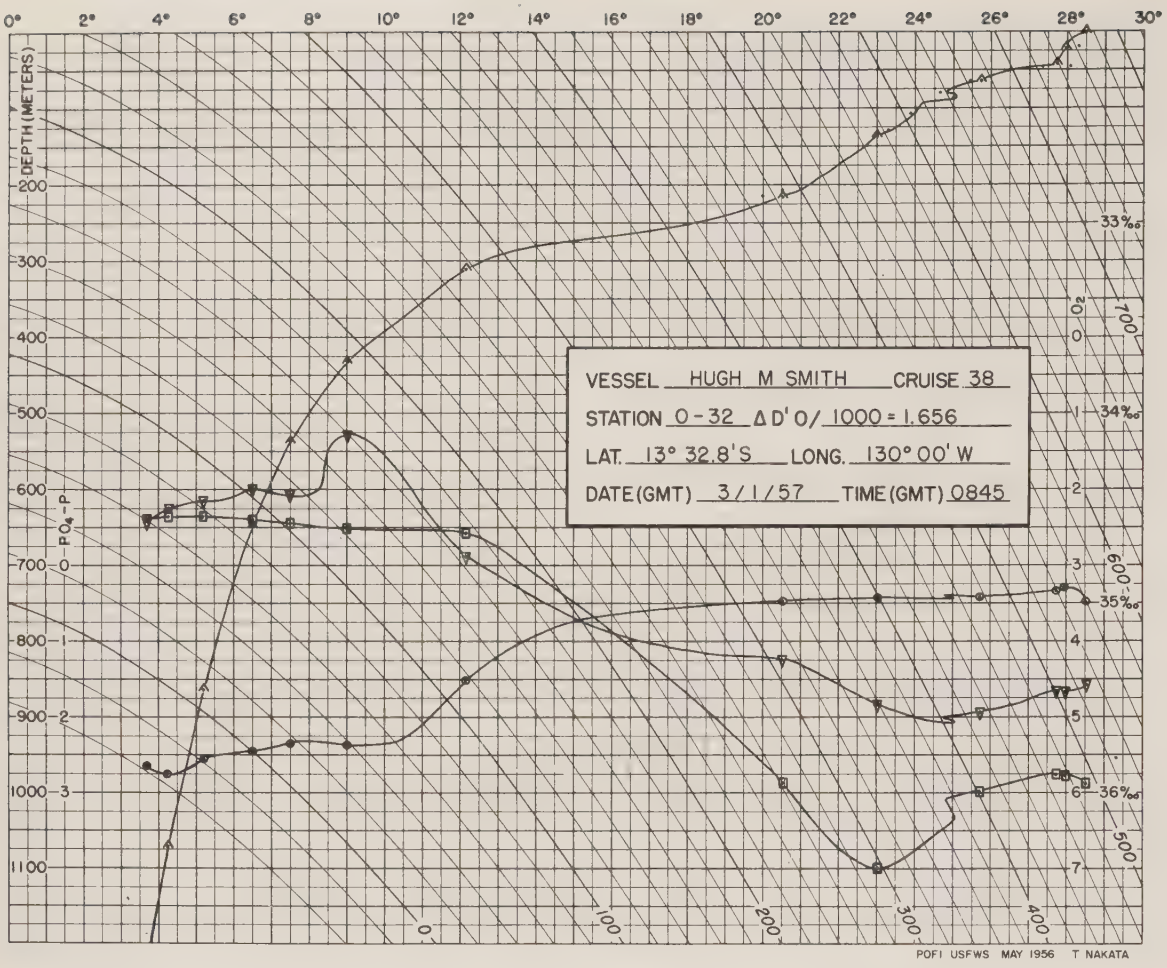
Weather: 02, cloud coverage 1. Wind: 090°, 07 kt. Sea: 1-3 ft. Wire angle: 10°.
BT slide: 165. Dry bulb: 81.0°F. Wet bulb: 75.1°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	27.88	35.70	489.4	4.52	0.52
26	27.41	35.82	466.1	4.66	0.44
57	27.24	35.82	460.7	4.59	0.52
82	25.48	35.90	402.3	4.80	0.58
150	20.81	35.90	273.3	4.13	0.64
229	15.82	35.14	209.8	3.01	1.22
345	10.53	34.78	134.7	0.88	2.27
467	8.75	34.69	112.8	1.47	2.27
584	7.72	34.61	104.2	1.22	2.57
700	6.62	34.60	90.1	0.93	2.72
926	5.12	34.54	76.4	1.58	2.71
1149	4.15	34.56	64.8	2.16	2.76
1358	3.55	34.58	57.7	2.14	2.71


VESSEL HUGH M SMITH CRUISE 38
STATION 0-31 ΔD' O/ 1000 = 1.611
LAT. 11° 48.7' S LONG. 129° 58.2' W
DATE (GMT) 2/28/57 TIME (GMT) 1947
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

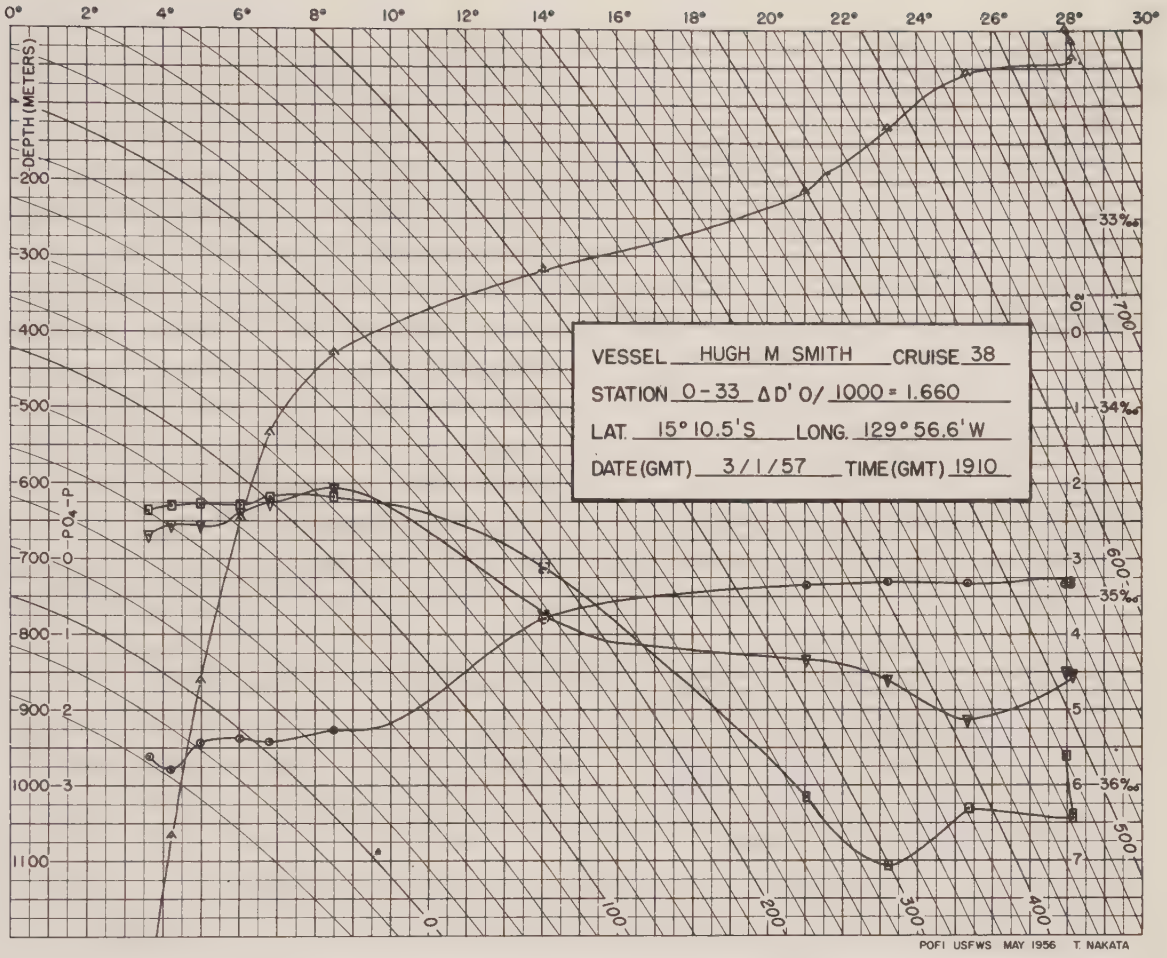
Weather: 02, cloud coverage 1. Wind: 070°, 11 kt. Sea: 1-3 ft. Wire angle: 03°.
BT slide: 169. Dry bulb: 83.0°F. Wet bulb: 75.2°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.14	35.90	482.9	4.58	0.46
26	27.73	35.90	470.5	4.64	0.42
52	27.74	36.02	462.2	4.65	0.42
78	25.07	36.02	381.6	4.92	0.53
151	22.35	36.33	282.6	4.39	0.44
232	18.38	35.52	240.3	4.16	0.58
350	10.10	34.63	138.3	1.06	2.39
473	7.89	34.63	104.7	1.99	2.39
591	6.88	34.60	93.2	1.83	2.57
708	6.18	34.56	87.3	1.97	2.55
936	4.90	34.54	74.0	1.99	2.70
1159	4.02	34.56	63.6	2.38	2.73
1365	3.46	34.60	55.4	2.40	2.70


VESSEL HUGH M SMITH CRUISE 38
STATION 0-32 ΔD'O/1000 = 1.656
LAT. 13° 32.8'S LONG. 130° 00' W
DATE (GMT) 3/1/57 TIME (GMT) 0845
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

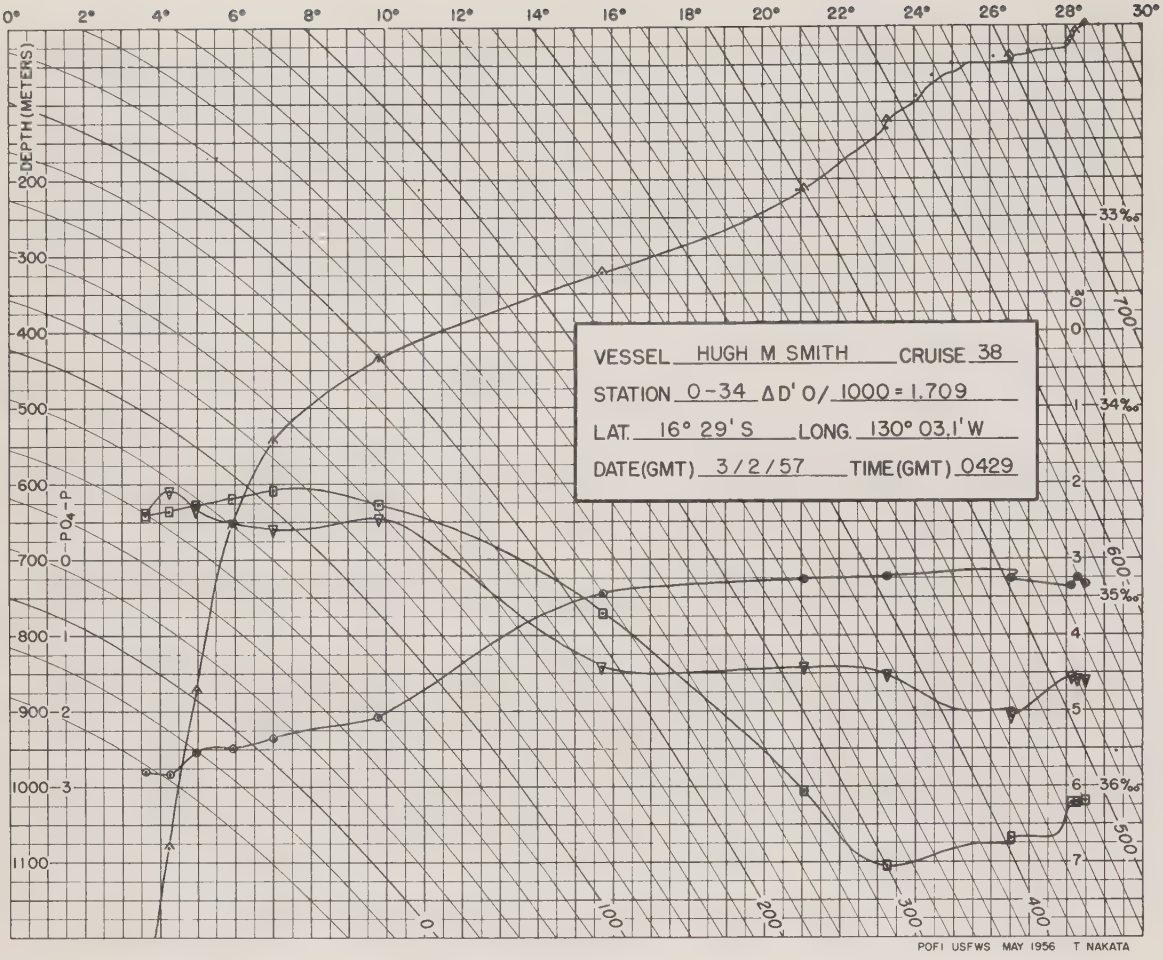
Weather: 03, cloud coverage 5. Wind: 250°, 04 kt. Sea: 1-3 ft. Wire angle: 10°.
BT slide: 171. Dry bulb: 80.4°F. Wet bulb: 74.1°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, μg at./L.
0	28.53	35.95	492.0	4.59	0.48
21	27.96	35.91	476.5	4.66	0.30
42	27.74	35.90	470.5	4.65	0.33
63	25.72	35.99	402.8	4.93	0.42
136	23.04	36.40	296.4	4.82	0.43
215	20.56	35.95	263.0	4.22	0.47
321	12.19	34.63	174.5	2.87	1.52
432	9.02	34.61	123.2	1.28	2.37
538	7.52	34.58	103.4	2.08	2.35
648	6.52	34.56	91.6	2.00	2.47
864	5.21	34.54	77.7	2.16	2.57
1072	4.26	34.54	67.3	2.25	2.76
1281	3.68	34.56	60.1	2.42	2.66


VESSEL HUGH M SMITH CRUISE 38
STATION 0-33 ΔD' O/ 1000 = 1.660
LAT. 15° 10.5'S LONG. 129° 56.6'W
DATE (GMT) 3/1/57 TIME (GMT) 1910
DEPTH (METERS)
PO4-P
O2
POFI USFWS MAY 1956 T. NAKATA

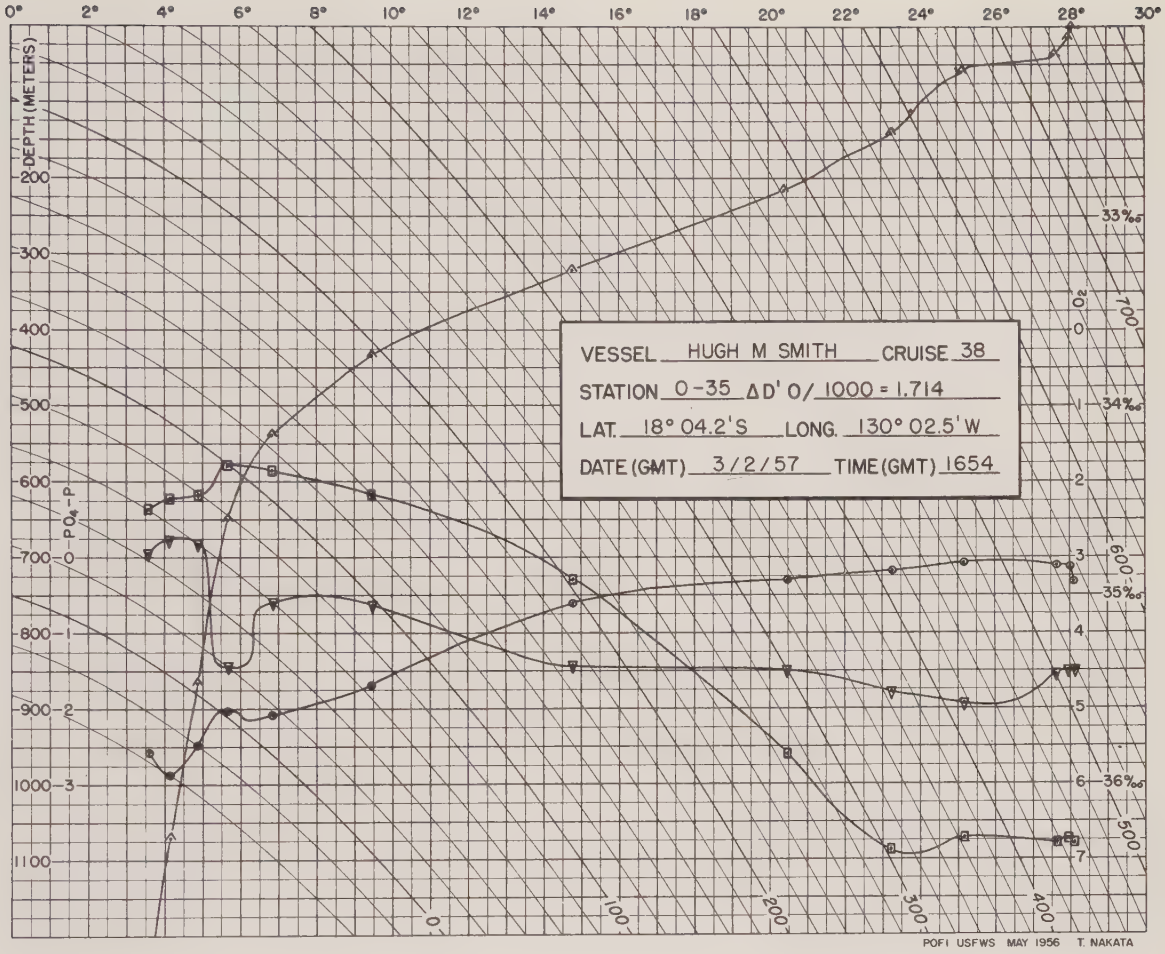
Weather: 02, cloud coverage 5. Wind: 300°, 02 kt. Sea: < 1 ft. Wire angle: < 05°.
BT slide: 174. Dry bulb: 81.9°F. Wet bulb: 75.2°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl. /ton	O_2, ml. /L.	PO_4-P, µg at. /L.
0	27.99	35.84	482.4	4.50	0.33
16	28.15	36.15	465.0	4.52	0.33
36	28.16	36.17	464.0	4.54	0.29
57	25.36	36.13	382.0	5.12	0.32
130	23.21	36.42	299.5	4.60	0.30
213	21.04	36.06	267.4	4.33	0.33
320	14.10	34.85	195.2	3.73	0.79
320	14.05	34.85	194.3	-	-
431	8.50	34.47	125.7	2.06	2.27
536	6.82	34.47	102.2	2.25	2.42
647	6.05	34.51	89.7	2.38	2.37
861	4.98	34.51	77.1	2.55	2.42
1068	4.21	34.52	68.7	2.55	2.78
1274	3.65	34.54	61.5	2.68	2.61


VESSEL HUGH M SMITH CRUISE 38
STATION 0-34 ΔD' O/ 1000 = 1.709
LAT. 16° 29' S LONG. 130° 03.1' W
DATE(GMT) 3/2/57 TIME(GMT) 0429
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

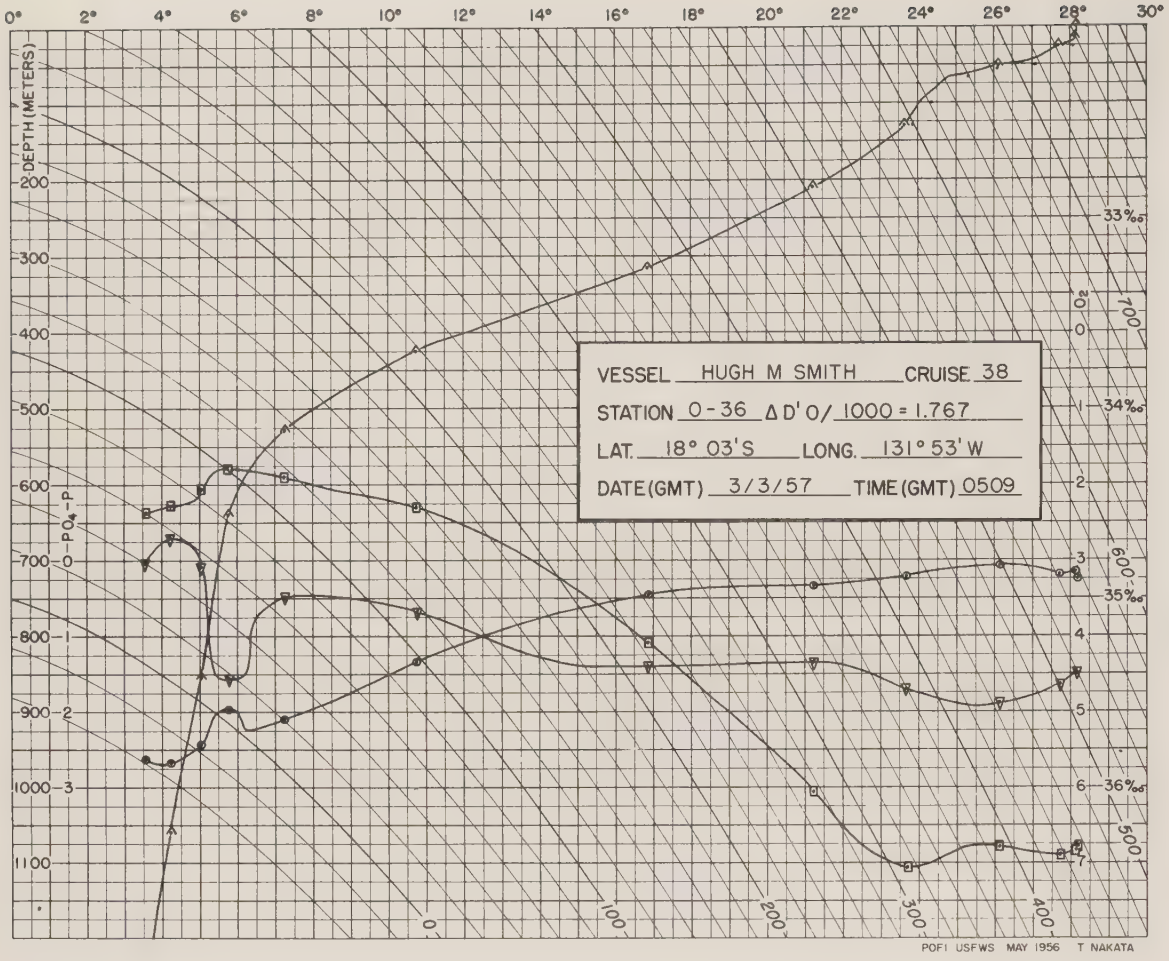
Weather: 15, cloud coverage 3. Wind: 310°, 05 kt. Sea: < 1 ft. Wire angle: 10°.
BT slide: 178. Dry bulb: 81.2°F. Wet bulb: 73.1°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.52	36.08	481.9	4.60	0.33
10	28.28	36.09	473.8	4.58	0.25
21	28.14	36.09	469.3	4.55	0.33
41	26.54	36.27	407.0	5.08	0.25
125	23.29	36.42	302.0	4.52	0.22
215	21.09	36.02	271.7	4.41	0.25
322	15.80	35.08	213.7	4.41	0.45
435	9.80	34.51	142.5	2.45	2.07
542	7.01	34.43	107.7	2.57	2.32
654	5.92	34.47	91.0	2.51	2.47
871	4.98	34.51	77.0	2.31	2.52
1079	4.24	34.54	67.3	2.10	2.82
1288	3.62	34.56	59.8	2.38	2.79


VESSEL HUGH M SMITH CRUISE 38
STATION 0-35 ΔD' O/ 1000 = 1.714
LAT. 18° 04.2'S LONG. 130° 02.5'W
DATE (GMT) 3/2/57 TIME (GMT) 1654
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

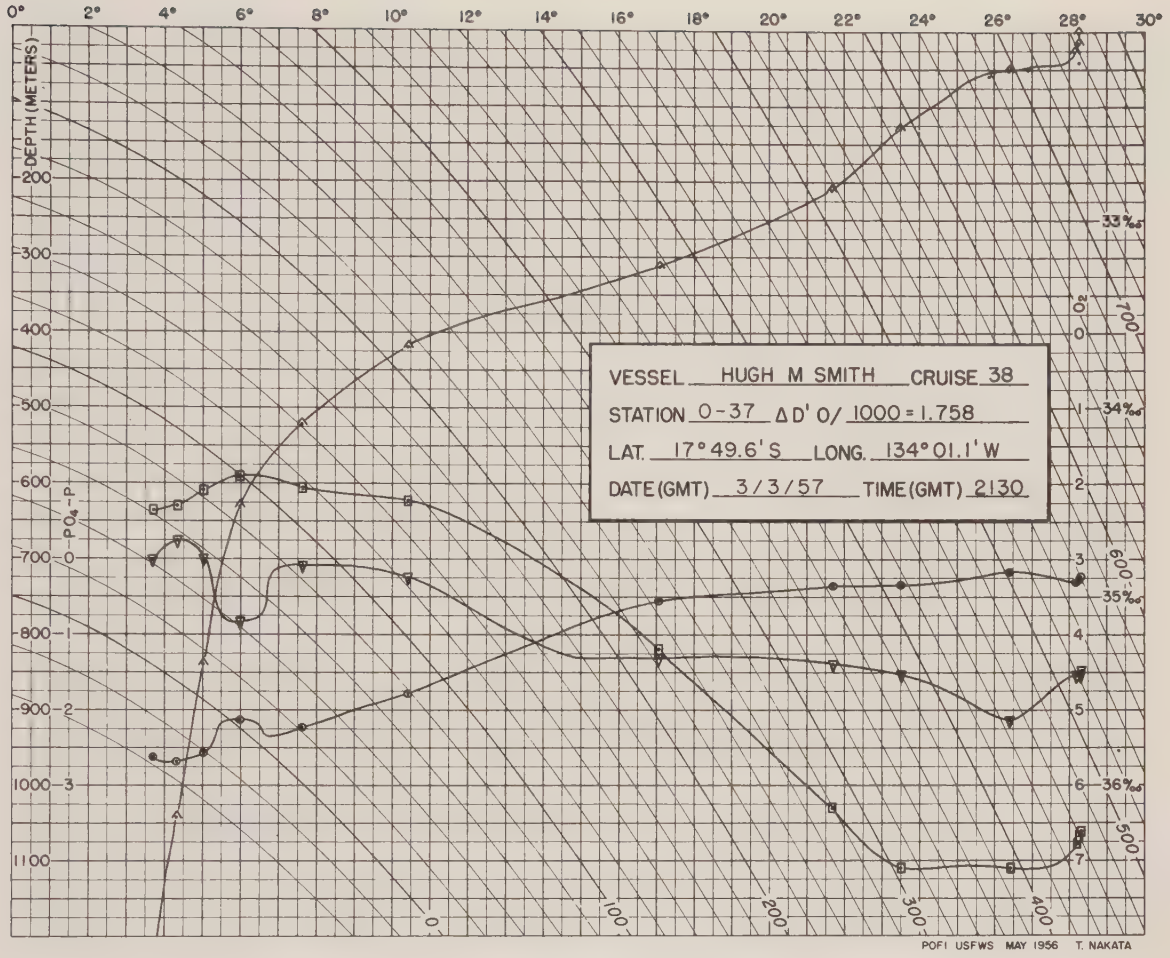
Weather: 02, cloud coverage 2. Wind: 100°, 07 kt. Sea: < 1 ft. Wire angle: < 05°.
BT slide: 180. Dry bulb: 83.0°F. Wet bulb: 79.4°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl. /ton	O_2, ml. /L.	PO_4-P, µg at. /L.
0	28.10	36.31	452.0	4.47	0.33
15	27.95	36.29	448.7	4.50	0.14
36	27.64	36.31	438.0	4.54	0.10
57	25.18	36.29	365.1	4.93	0.06
141	23.26	36.35	305.8	4.76	0.18
216	20.46	35.84	268.6	4.50	0.30
322	14.80	34.92	204.2	4.43	0.62
434	9.47	34.47	140.3	3.63	1.67
539	6.86	34.34	112.2	3.60	2.07
650	5.68	34.31	100.2	4.44	2.02
865	4.90	34.47	79.3	2.80	2.47
1070	4.15	34.49	70.0	2.76	2.86
1276	3.59	34.54	60.9	2.93	2.56


VESSEL HUGH M SMITH CRUISE 38
STATION 0-36 Δ D' O/ 1000 = 1.767
LAT. 18° 03'S LONG. 131° 53' W
DATE (GMT) 3/3/57 TIME (GMT) 0509
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

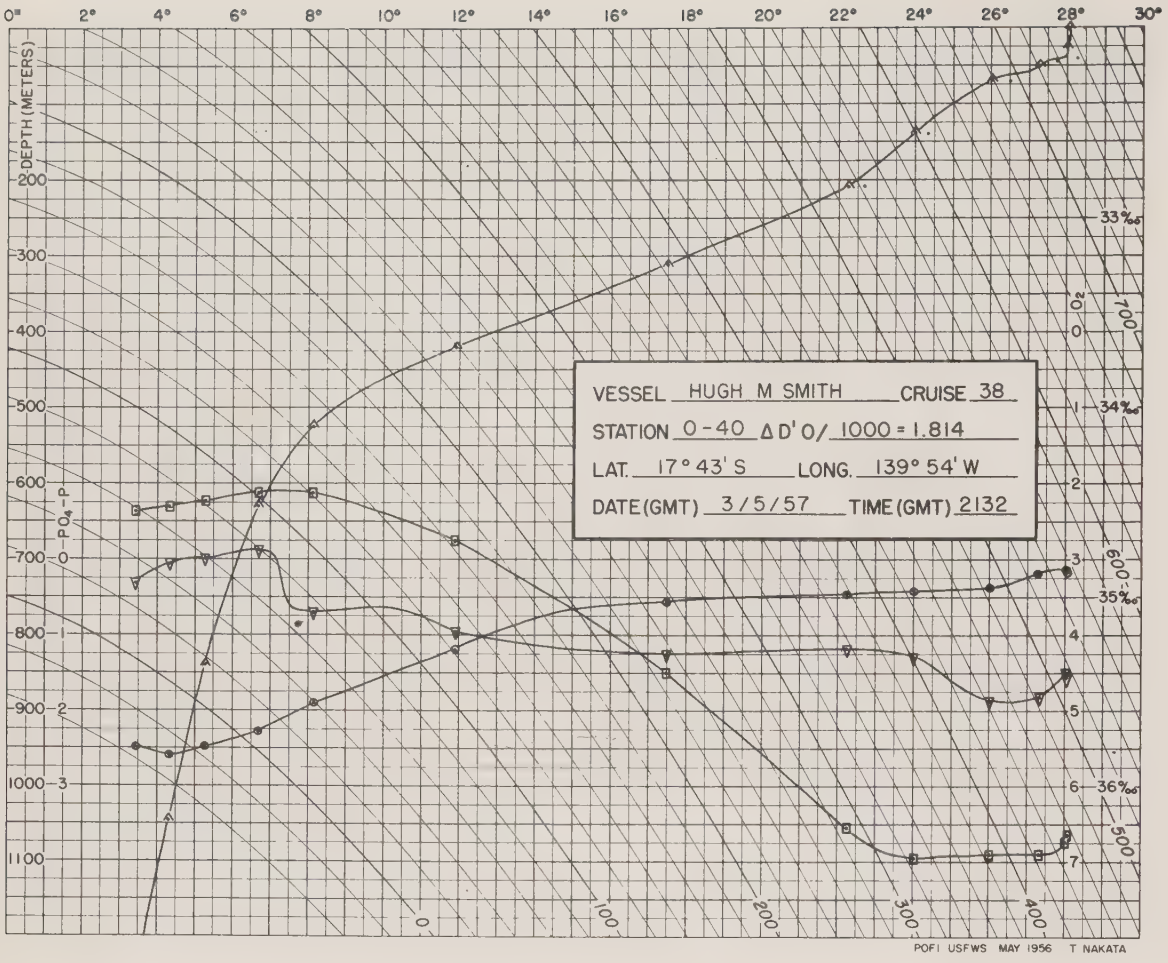
Weather: 20, cloud coverage 3. Wind: 300°, 17 kt. Sea: 3-5 ft. Wire angle: 15°.
BT slide: 184. Dry bulb: 81.3°F. Wet bulb: 74.4°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, μg at./L.
0	28.20	36.31	455.1	4.50	0.25
15	28.14	36.33	452.0	4.49	0.14
25	27.72	36.35	437.3	4.63	0.18
51	26.12	36.31	391.4	4.87	0.06
128	23.67	36.42	312.2	4.70	0.21
210	21.25	36.02	275.8	4.34	0.33
314	16.87	35.23	226.4	4.39	0.45
424	10.78	34.52	157.7	3.65	1.32
529	7.27	34.36	116.3	3.47	2.07
639	5.78	34.31	101.3	4.55	1.97
853	5.04	34.42	84.6	3.07	2.42
1059	4.22	34.51	69.3	2.69	2.66
1267	3.56	34.54	60.8	3.04	2.61


VESSEL HUGH M SMITH CRUISE 38
STATION 0-37 ΔD' O/ 1000 = 1.758
LAT. 17°49.6'S LONG. 134°01.1'W
DATE (GMT) 3/3/57 TIME (GMT) 2130
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

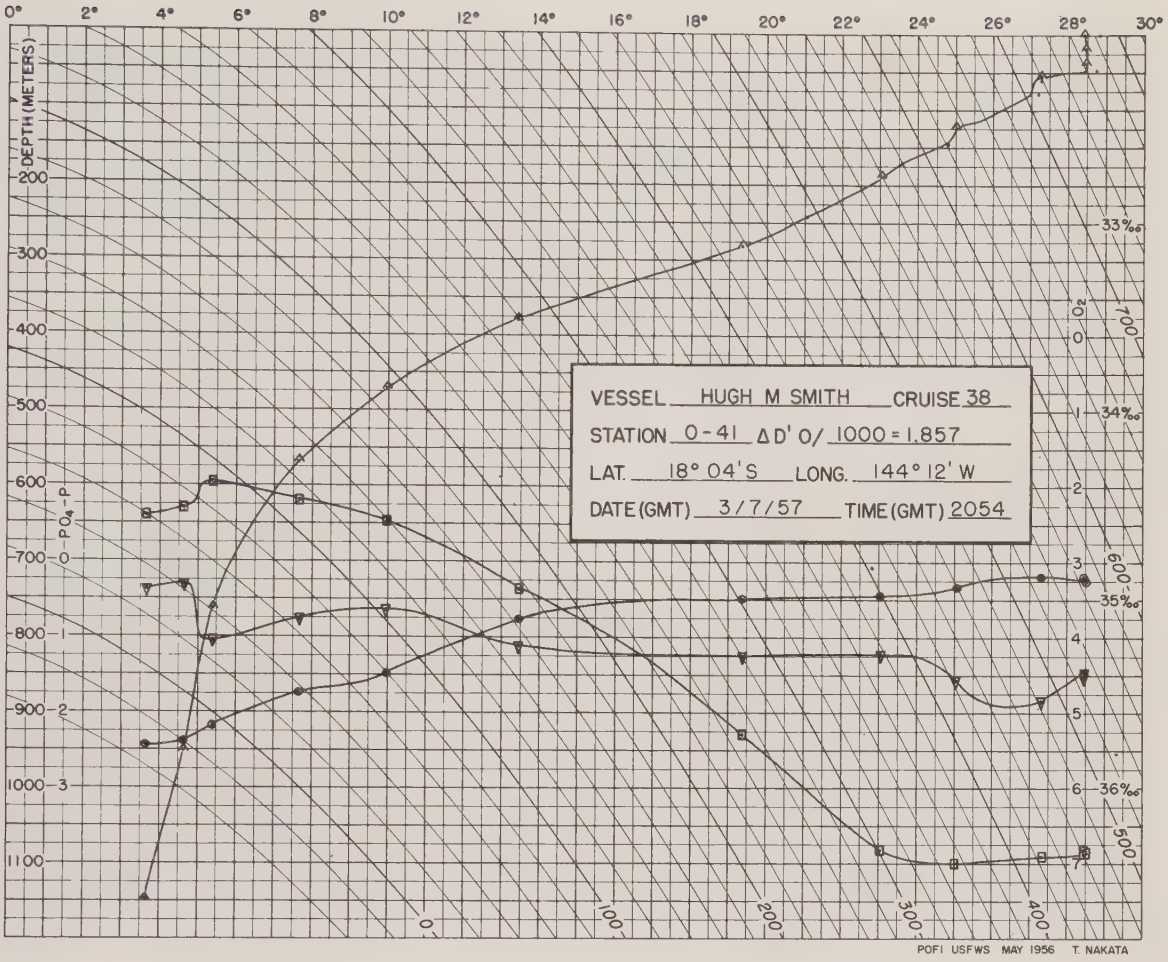
Weather: 51, cloud coverage 9. Wind: 330°, 17 kt. Sea: 3-5 ft. Wire angle: 14°.
BT slide: 189. Dry bulb: 80.6°F. Wet bulb: 76.7°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.30	36.24	463.4	4.47	0.22
15	28.29	36.26	461.7	4.54	0.25
26	28.20	36.31	455.1	4.54	0.29
51	26.40	36.44	390.6	5.12	0.14
128	23.50	36.44	306.0	4.52	0.33
210	21.69	36.13	279.3	4.37	0.33
313	17.08	35.28	227.7	4.29	0.55
419	10.42	34.49	154.0	3.24	1.77
522	7.62	34.42	116.7	3.06	2.22
629	5.98	34.36	99.7	3.81	2.12
838	5.04	34.43	83.7	2.98	2.56
1041	4.32	34.51	70.4	2.75	2.67
1247	3.70	34.54	62.0	3.01	2.61


VESSEL HUGH M SMITH CRUISE 38
STATION 0-40 ΔD'O/1000 = 1.814
LAT. 17° 43' S LONG. 139° 54' W
DATE (GMT) 3/5/57 TIME (GMT) 2132
DEPTH (METERS)
PO4-P
POF I USFWS MAY 1956 T NAKATA

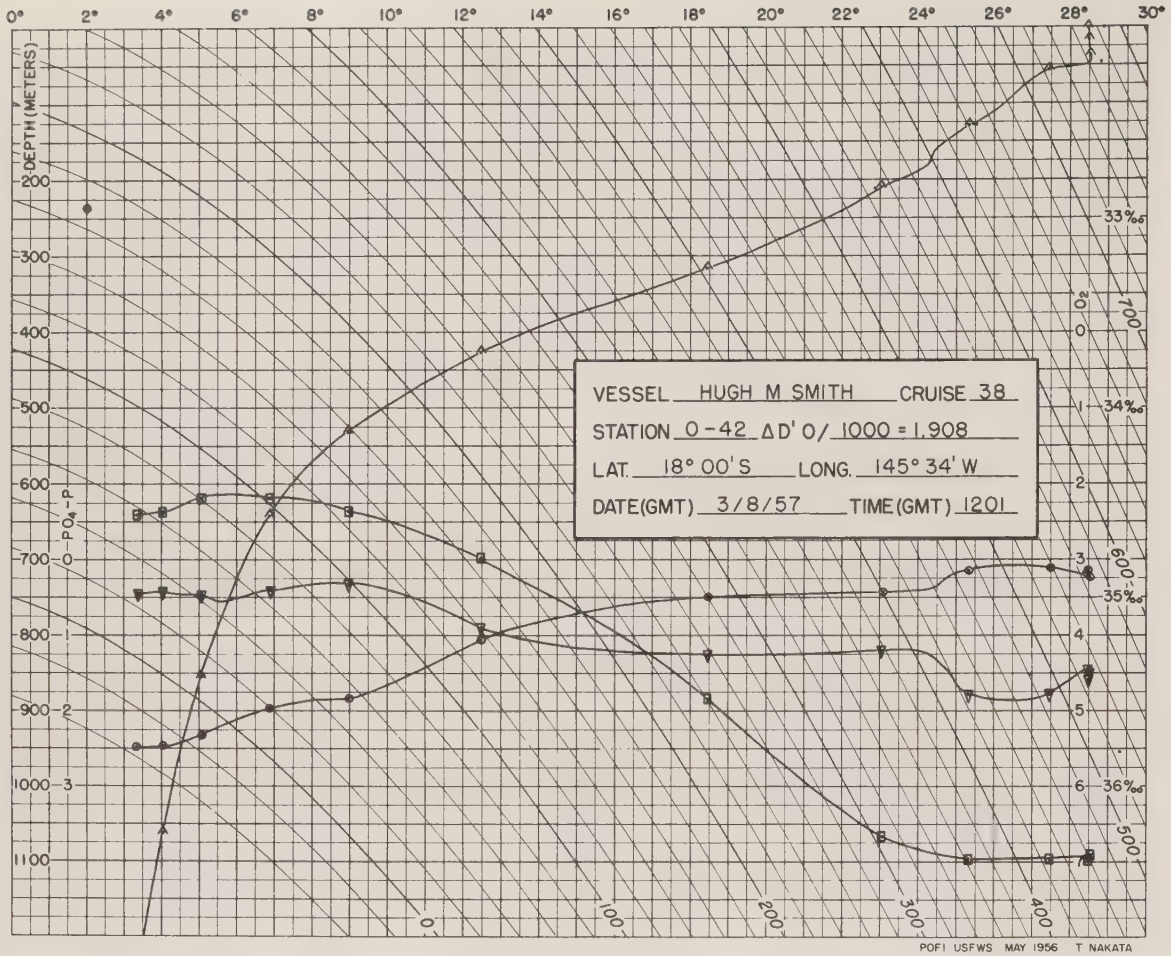
Weather: 01, cloud coverage 5. Wind: 350°, 19 kt. Sea: 3-5 ft. Wire angle: 15°.
BT slide: 201. Dry bulb: 82.9°F. Wet bulb: 76.6°F. Barometric pressure: 1009 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.06	36.26	454.8	4.55	0.14
25	28.02	36.29	451.0	4.50	0.13
50	27.32	36.36	423.9	4.80	0.18
70	26.02	36.36	385.0	4.85	0.33
137	24.01	36.38	325.0	4.30	0.41
209	22.26	36.22	288.0	4.17	0.45
312	17.50	35.39	229.1	4.25	0.55
420	11.92	34.70	164.5	3.96	1.17
523	8.18	34.45	122.3	3.68	1.87
630	6.70	34.45	102.1	2.86	2.27
840	5.28	34.49	82.0	2.97	2.47
1044	4.35	34.51	70.7	3.04	2.56
1252	3.44	34.54	59.7	3.30	2.47


VESSEL HUGH M SMITH CRUISE 38
STATION 0-41 ΔD' O/ 1000 = 1.857
LAT. 18° 04' S LONG. 144° 12' W
DATE (GMT) 3/7/57 TIME (GMT) 2054
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

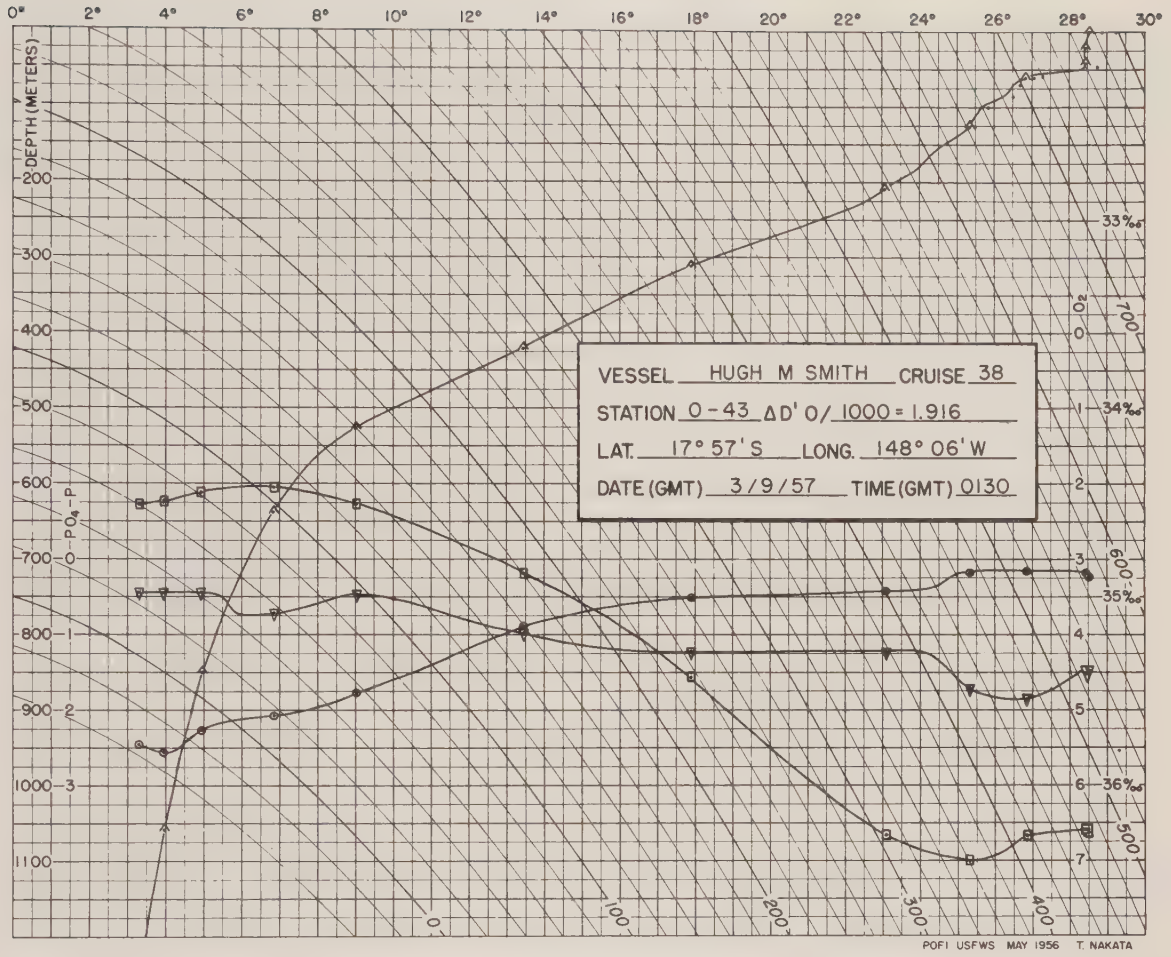
Weather: 02, cloud coverage 8. Wind: 320°, 22 kt. Sea: 5-8 ft. Wire angle: 30°.
BT slide: 207. Dry bulb: 80.8°F. Wet bulb: 75.2°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl. /ton	O_2, ml. /L.	PO_4-P, µg at. /L.
0	28.44	36.35	460.3	4.56	0.18
18	28.45	36.33	462.0	4.50	0.21
37	28.48	36.35	461.7	4.49	0.25
55	27.31	36.36	423.8	4.83	0.18
124	25.03	36.40	352.9	4.56	0.33
189	23.07	36.33	302.3	4.22	0.45
281	19.38	35.71	250.7	4.23	0.48
378	13.47	34.94	176.1	4.11	0.76
471	9.96	34.58	139.9	3.62	1.47
569	7.65	34.47	113.5	3.74	1.72
761	5.40	34.38	91.7	4.03	2.15
950	4.62	34.51	73.6	3.30	2.37
1148	3.63	34.56	59.9	3.36	2.42



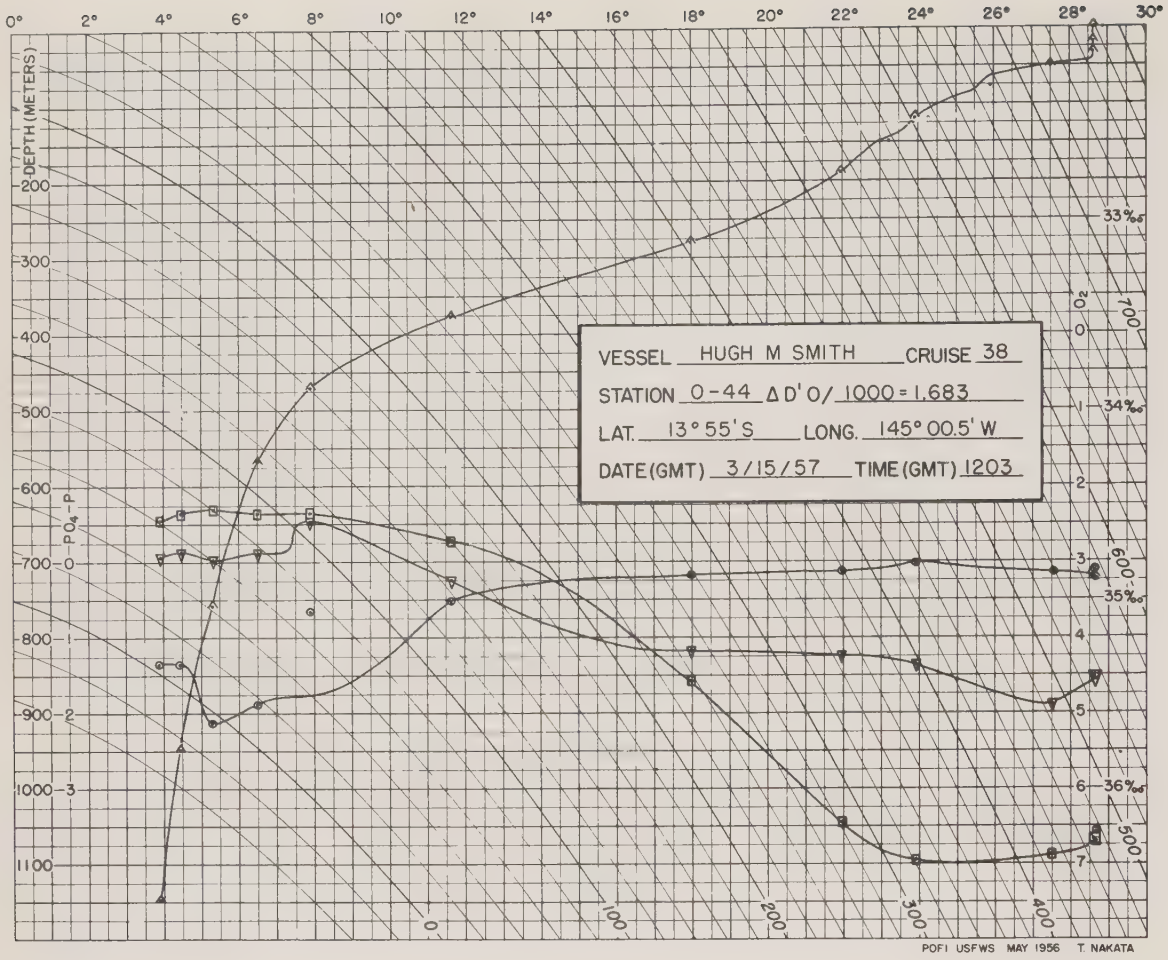
Weather: 01, cloud coverage 6. Wind: 280°, 15 kt. Sea: 5-8 ft. Wire angle: 15°.
BT slide: 210. Dry bulb: 82.2°F. Wet bulb: 76.5°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.49	36.38	459.4	4.46	0.14
15	28.49	36.38	459.4	4.60	0.18
36	28.54	36.36	462.6	4.48	0.21
56	27.44	36.38	426.7	4.76	0.10
129	25.36	36.38	364.0	4.76	0.14
212	23.05	36.26	306.8	4.20	0.41
316	18.45	35.53	241.4	4.24	0.48
426	12.48	34.79	168.3	3.90	1.07
531	8.96	34.54	127.3	3.31	1.82
641	6.89	34.47	102.8	3.40	1.97
854	5.07	34.47	81.1	3.46	2.32
1062	4.02	34.54	65.1	3.42	2.48
1274	3.38	34.56	57.5	3.44	2.49


VESSEL HUGH M SMITH CRUISE 38
STATION 0-43 ΔD' O/ 1000 = 1.916
LAT. 17° 57' S LONG. 148° 06' W
DATE (GMT) 3/9/57 TIME (GMT) 0130
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

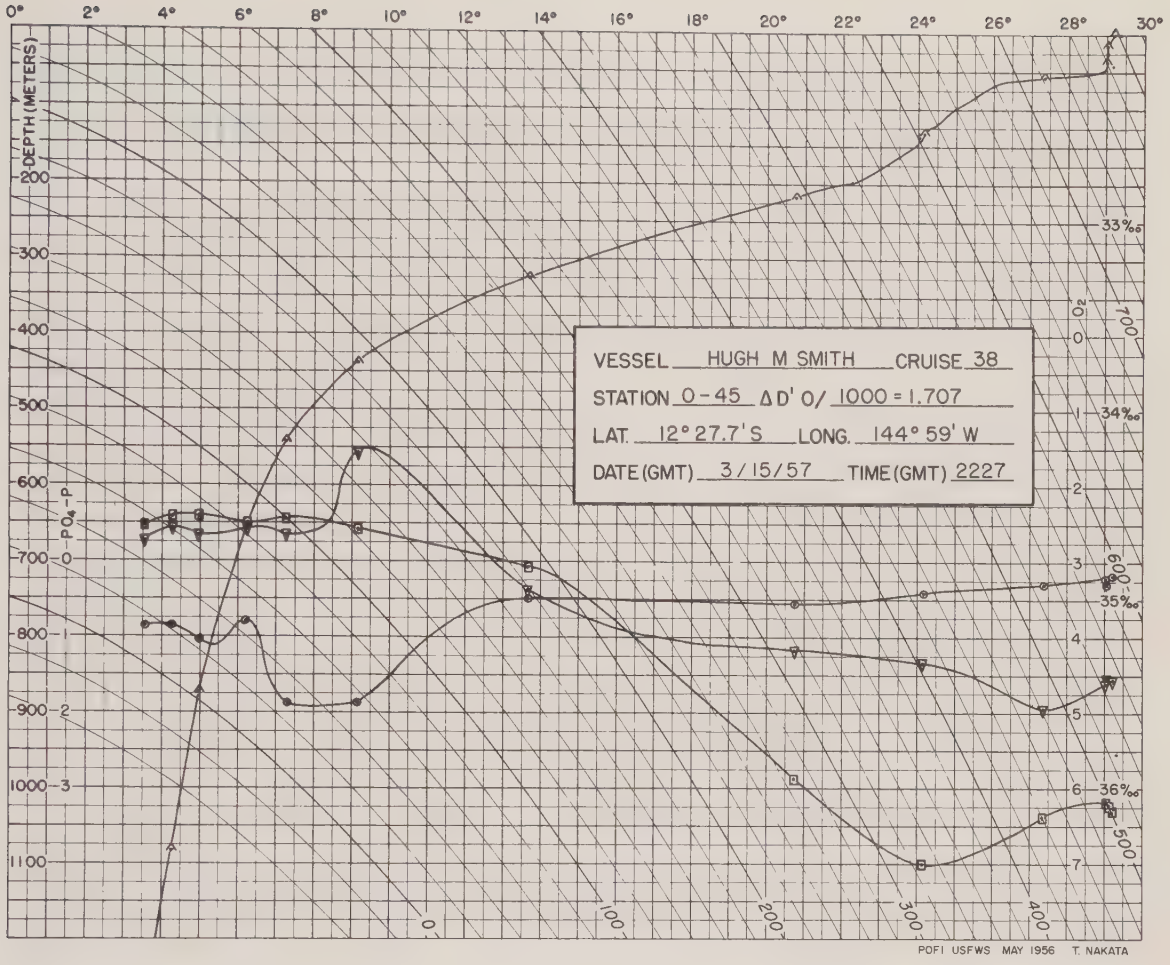
Weather: 51, cloud coverage 8. Wind: 300°, 12 kt. Sea: 3-5 ft. Wire angle: 15°.
BT slide: 214. Dry bulb: 82.5°F. Wet bulb: 79.1°F. Barometric pressure: 1008 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.52	36.26	469.0	4.48	0.21
20	28.42	36.24	467.2	4.49	0.17
40	28.44	36.24	468.2	4.48	0.17
61	26.83	36.27	415.7	4.85	0.13
126	25.33	36.40	361.7	4.71	0.17
209	23.08	36.26	307.3	4.21	0.41
312	17.90	35.43	235.5	4.23	0.52
421	13.46	34.88	180.4	3.99	0.90
526	9.05	34.51	130.8	3.46	1.77
636	6.84	34.42	106.2	3.71	2.07
850	4.93	34.45	81.2	3.45	2.29
1058	3.96	34.49	68.2	3.46	2.57
1270	3.31	34.51	60.8	3.44	2.47


VESSEL HUGH M SMITH CRUISE 38
STATION 0-44 Δ D' O/ 1000 = 1.683
LAT. 13° 55' S LONG. 145° 00.5' W
DATE (GMT) 3/15/57 TIME (GMT) 1203
DEPTH (METERS)
POFI USFWS MAY 1956 T. NAKATA

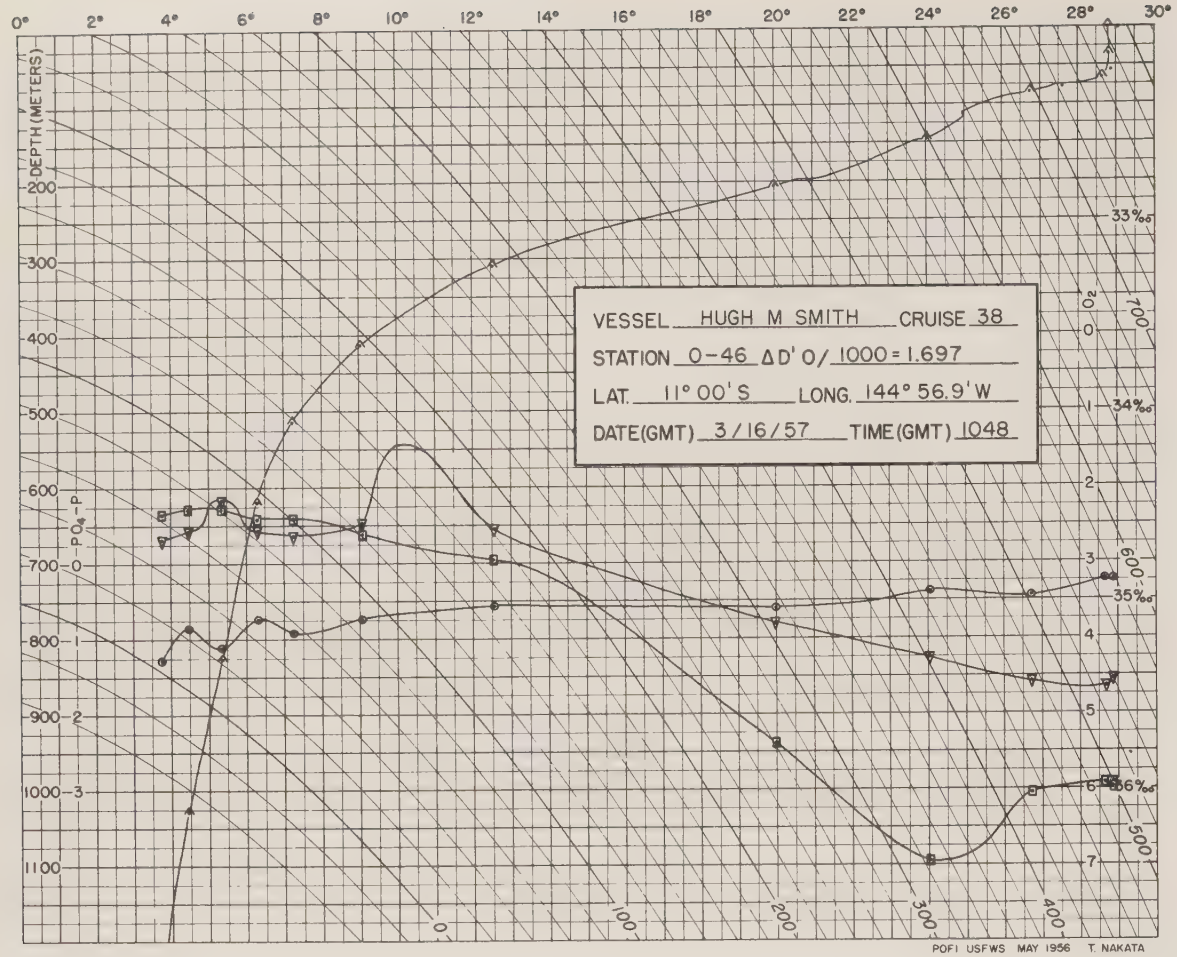
Weather: 02, cloud coverage 7. Wind: 100°, 12 kt. Sea: 1-3 ft. Wire angle: 25°.
BT slide: 216. Dry bulb: 81.4°F. Wet bulb: 78.0°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.62	36.24	473.7	4.54	0.22
18	28.62	36.27	471.6	4.52	0.10
32	28.64	36.29	470.5	4.54	0.14
50	27.51	36.35	430.8	4.89	0.14
119	23.91	36.38	322.1	4.37	0.03
188	21.98	36.18	283.6	4.24	0.14
280	17.97	35.43	237.0	4.19	0.18
377	11.62	34.69	160.0	3.24	0.52 P
470	7.89	34.54	111.5	2.46	0.67
567	6.52	34.54	93.2	2.88	1.87
759	5.29	34.52	80.0	2.98	2.12
949	4.42	34.54	69.2	2.88	0.85
1148	3.88	34.58	60.7	2.91	0.85


VESSEL HUGH M SMITH CRUISE 38
STATION 0-45 Δ D' O/ 1000 = 1.707
LAT. 12° 27.7' S LONG. 144° 59' W
DATE (GMT) 3/15/57 TIME (GMT) 2227
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

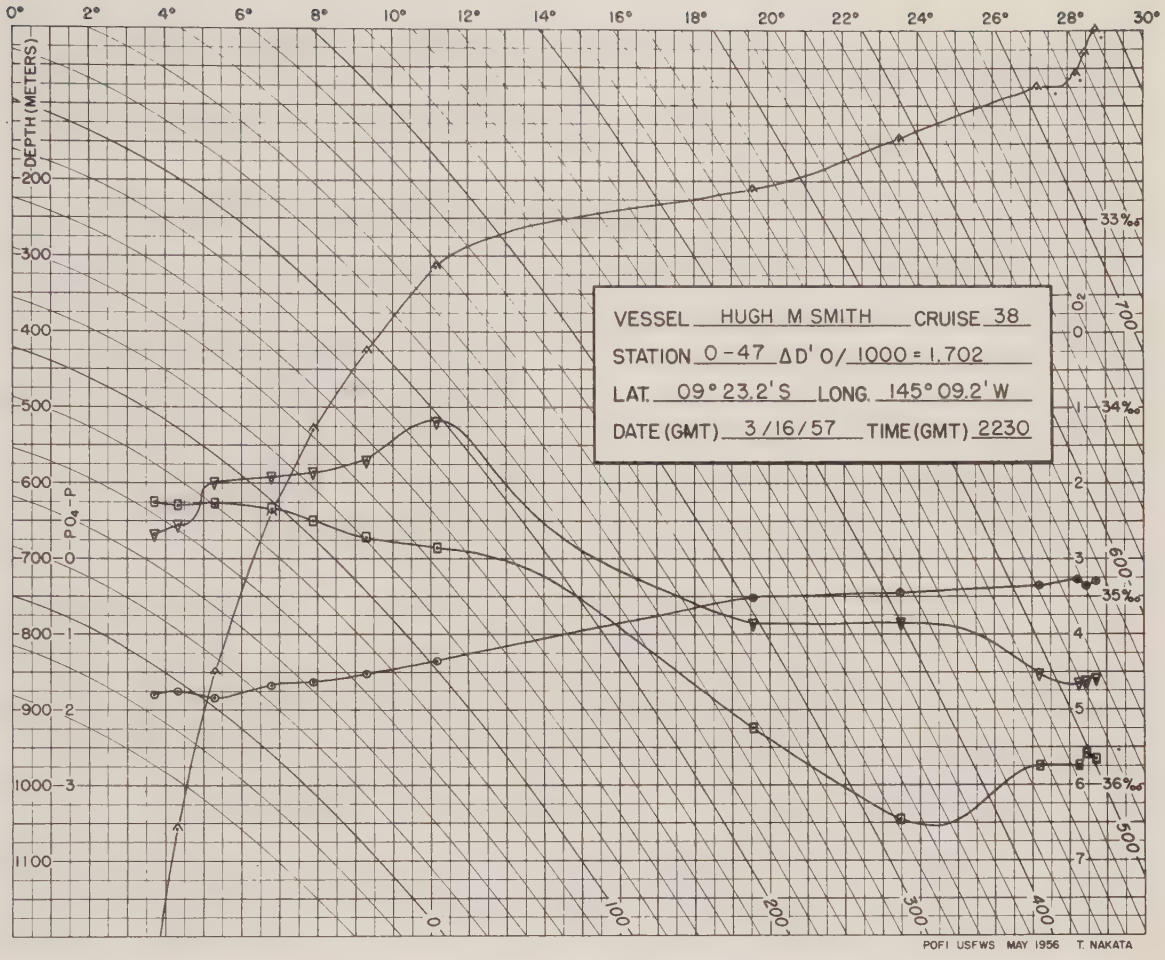
Weather: 02, cloud coverage 7. Wind: 090°, 08 kt. Sea: 1-3 ft. Wire angle: 05°.
BT slide: 219. Dry bulb: 85.0°F. Wet bulb: 79.0°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl. /ton	O_2, ml. /L.	PO_4-P, µg at. /L.
0	29.22	36.13	500.3	4.56	0.18
16	29.06	36.09	498.5	4.55	0.29
37	29.02	36.08	498.0	4.60	0.21
57	27.37	36.15	441.0	4.96	0.29
132	24.18	36.40	328.2	4.34	0.41
217	20.76	35.95	268.4	4.17	0.55
324	13.67	34.83	187.9	3.38	0.48
436	9.15	34.63	123.5	1.56	1.87
542	7.27	34.58	99.8	2.63	1.87
654	6.22	34.60	84.9	2.55	0.79
871	4.98	34.56	73.3	2.65	1.02
1081	4.24	34.56	65.7	2.56	0.85
1291	3.56	34.61	55.4	2.72	0.85



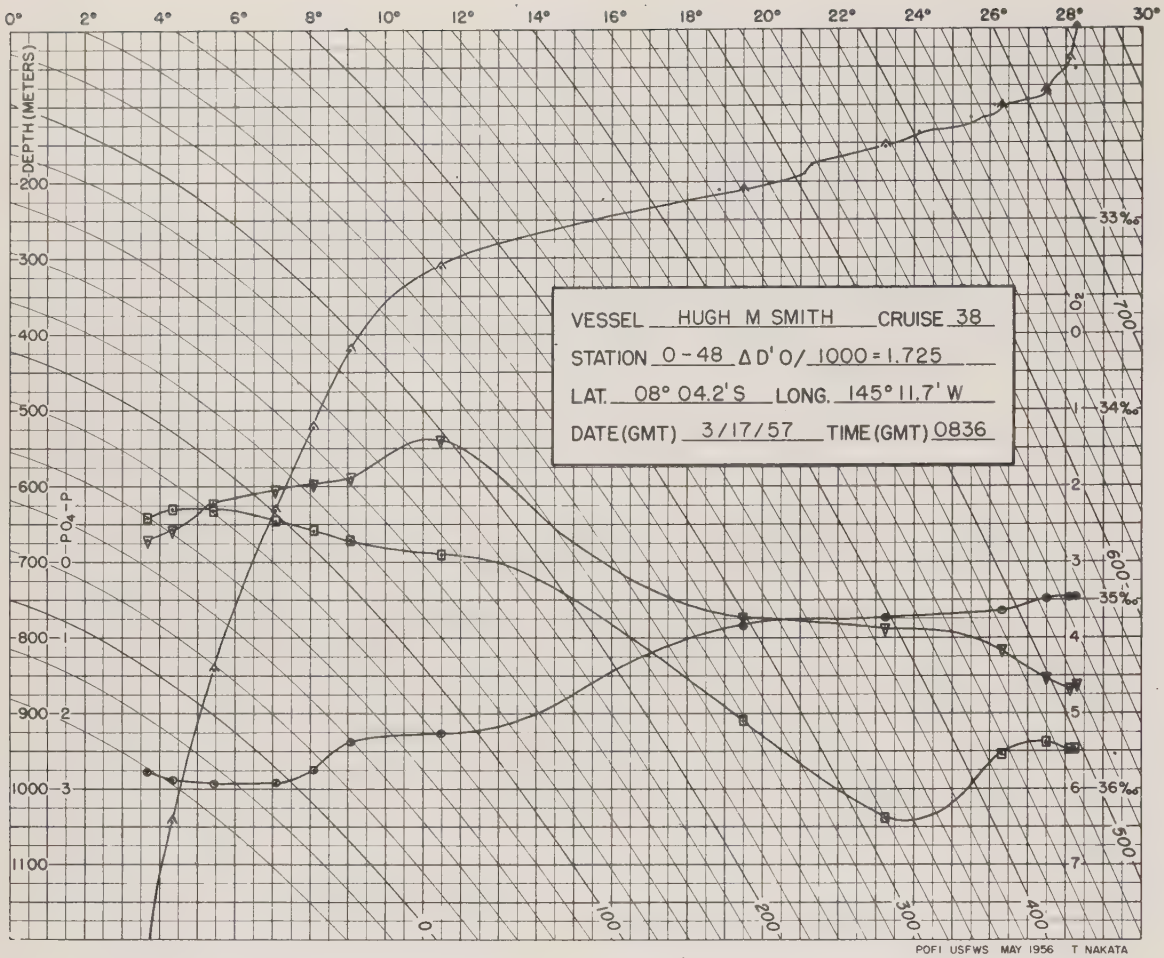
Weather: 01, cloud coverage 3. Wind: 090°, 08 kt. Sea: 1-3 ft. Wire angle: 15°.
BT slide: 222. Dry bulb: 82.3°F. Wet bulb: 76.4°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, μg at./L.
0	28.82	35.99	497.8	4.56	NG
35	28.83	35.97	499.7	4.56	0.22
65	28.66	35.97	494.3	4.63	0.22
85	26.73	36.02	431.1	4.59	0.45
146	24.02	36.38	325.2	4.26	0.37
206	19.96	35.75	262.2	3.79	0.60
307	12.56	34.78	170.5	2.53	0.57
412	9.04	34.65	120.3	2.48	0.71
513	7.22	34.56	100.7	2.61	0.90
618	6.30	34.56	88.9	2.56	0.71
825	5.34	34.51	81.2	2.17	1.12
1026	4.42	34.51	71.4	2.55	0.85
1232	3.78	34.54	62.7	2.68	1.27



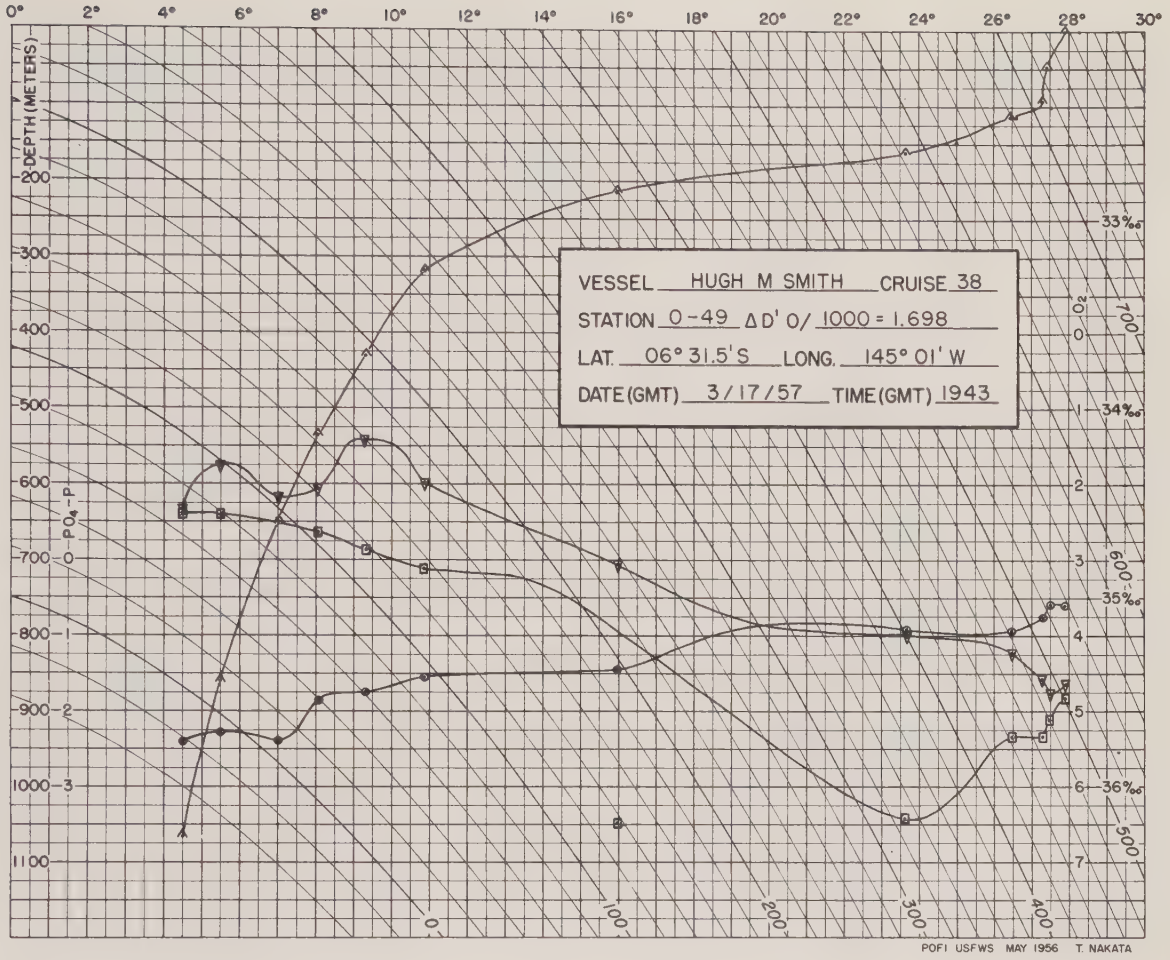
Weather: 02, cloud coverage 2. Wind: 050°, 09 kt. Sea: 1-3 ft. Wire angle: 10°.
BT slide: 225. Dry bulb: 85.4°F. Wet bulb: 76.8°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.72	35.86	504.3	4.60	0.30
30	28.44	35.84	496.7	4.62	0.35
56	28.24	35.90	486.2	4.66	0.28
77	27.20	35.90	453.7	4.52	0.35
144	23.48	36.18	324.5	3.86	0.46
212	19.58	35.70	256.7	3.86	0.51
316	11.14	34.74	148.0	1.19	1.35
426	9.30	34.69	121.3	1.70	1.52
530	7.87	34.60	106.8	1.85	1.64
639	6.80	34.54	96.7	1.92	1.68
852	5.28	34.51	80.6	2.00	1.81
1057	4.34	34.52	69.8	2.56	1.76
1266	3.68	34.54	61.8	2.67	1.80



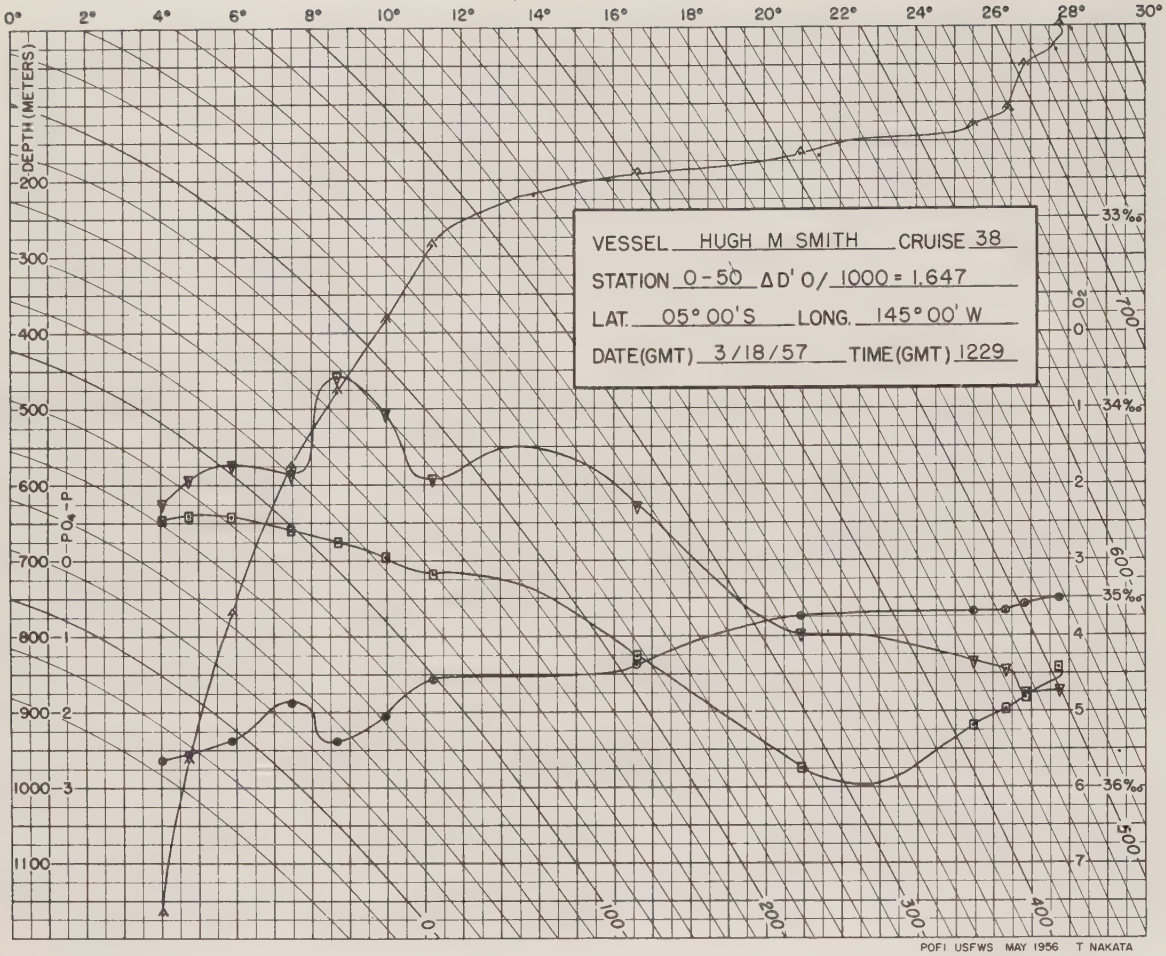
Weather: 01, cloud coverage 1. Wind: 010°, 05 kt. Sea: 1-3 ft. Wire angle: 14°.
BT slide: 229. Dry bulb: 81.5°F. Wet bulb: 76.3°F. Barometric pressure: 1012 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	28.29	35.79	495.7	4.63	0.49
41	28.12	35.79	490.2	4.68	0.49
82	27.50	35.75	473.9	4.55	0.49
103	26.32	35.82	432.8	4.18	0.65
154	23.24	36.15	319.8	3.89	0.74
211	19.50	35.64	258.9	3.75	0.83
312	11.46	34.76	152.0	1.40	2.26
420	9.08	34.69	117.8	1.89	2.37
522	8.10	34.63	107.7	1.98	2.74
630	7.08	34.58	97.3	2.03	2.90
841	5.42	34.52	81.4	2.21	2.91
1044	4.36	34.52	69.9	2.56	2.89
1250	3.66	34.56	60.2	2.70	2.78


VESSEL HUGH M SMITH CRUISE 38
STATION 0-49 ΔD' 0/ 1000 = 1.698
LAT. 06° 31.5' S LONG. 145° 01' W
DATE (GMT) 3/17/57 TIME (GMT) 1943
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

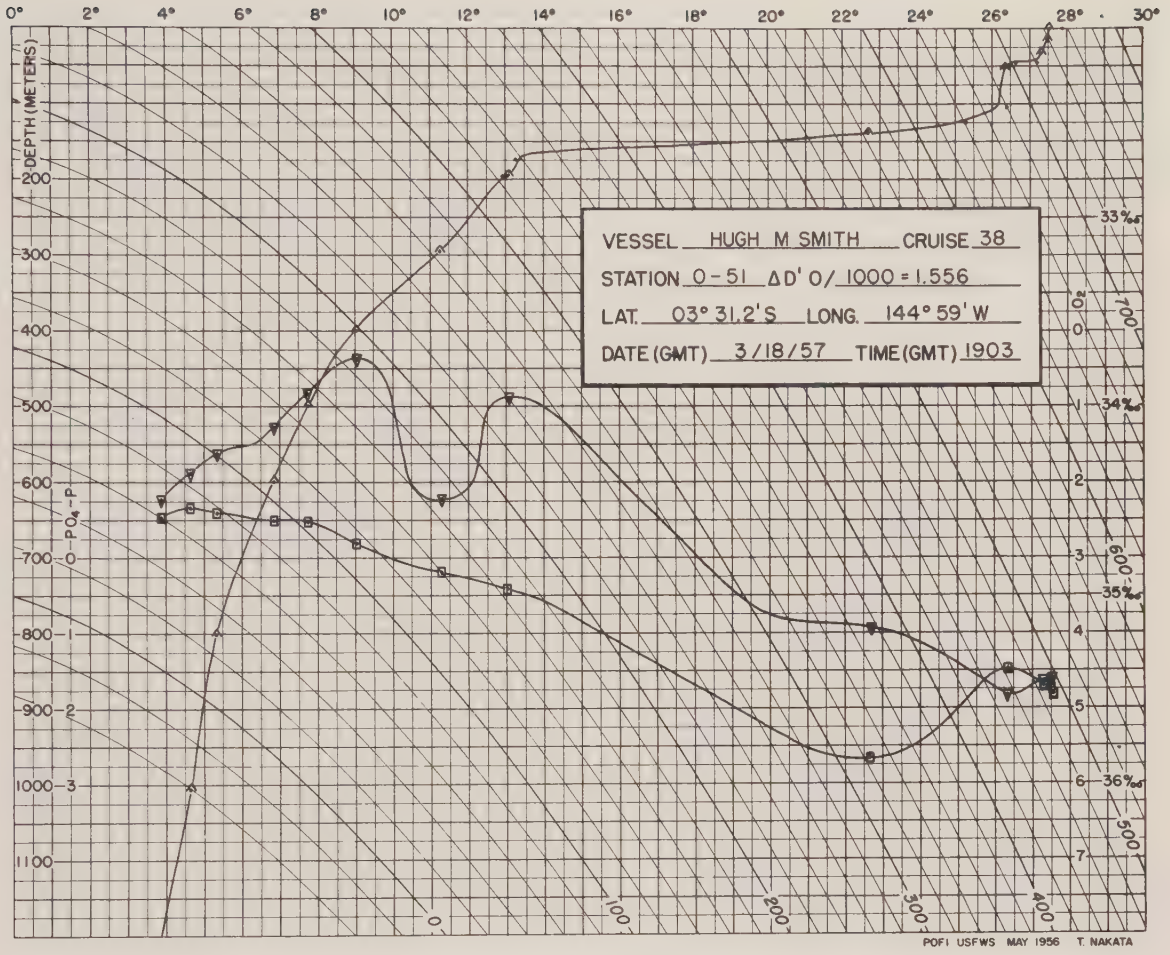
Weather: 02, cloud coverage 2. Wind: 060°, 08 kt. Sea: 1-3 ft. Wire angle: 07°.
BT slide: 231. Dry bulb: 83.2°F. Wet bulb: 76.7°F. Barometric pressure: 1013 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	27.90	35.53	502.2	4.63	0.59
47	27.47	35.64	480.7	4.76	0.58
93	27.30	35.73	469.0	4.59	0.74
114	26.42	35.73	442.3	4.21	0.91
161	23.65	36.17	329.8	3.98	0.92
213	15.98	36.19 P	136.7 P	3.03	1.45
319	10.88	34.85	135.2	1.98	1.54
430	9.34	34.74	118.3	1.41	1.75
535	8.06	34.65	105.7	2.05	1.86
646	7.02	34.60	95.0	2.17	2.37
860	5.48	34.56	79.1	1.75	2.29
1064	4.52	34.56	68.7	2.35	2.40
PT	-	-	-	-	-


VESSEL HUGH M SMITH CRUISE 38
STATION 0-50 ΔD' O/ 1000 = 1.647
LAT. 05° 00' S LONG. 145° 00' W
DATE(GMT) 3/18/57 TIME(GMT) 1229
DEPTH (METERS)
POFI USFWS MAY 1956 T NAKATA

Weather: 02, cloud coverage 2. Wind: 090°, 12 kt. Sea: 1-3 ft. Wire angle: 25°.
BT slide: 235. Dry bulb: 81.0°F. Wet bulb: 76.7°F. Barometric pressure: 1010 mb.

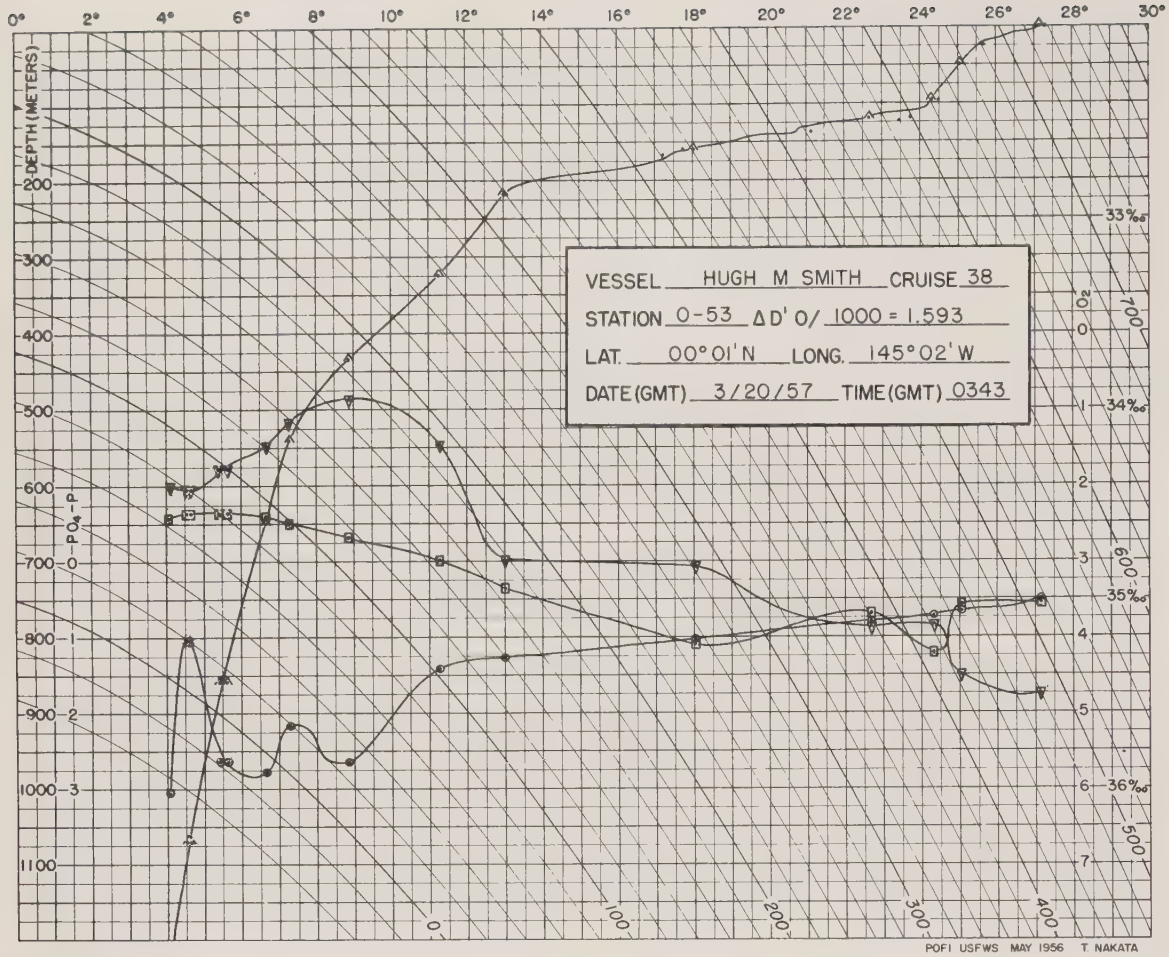
Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	27.76	35.37	509.2	4.73	0.51
52	26.81	35.53	468.4	4.77	0.59
108	26.38	35.59	451.5	4.46	0.68
127	25.48	35.68	418.0	4.34	0.67
164	20.94	35.90	276.5	3.98	0.74
192	16.61	35.30	215.7	2.27	1.37
285	11.21	34.87	139.5	1.91	1.56
383	9.96	34.78	125.0	1.06	2.04
476	8.70	34.70	111.5	0.58	2.39
576	7.46	34.63	98.7	1.83	1.86
770	5.87	34.56	83.6	1.72	2.37
964	4.76	34.56	71.0	1.91	2.55
1167	4.02	34.58	62.2	2.25	2.61


VESSEL HUGH M SMITH CRUISE 38
STATION 0-51 ΔD' O/ 1000 = 1.556
LAT. 03° 31.2'S LONG. 144° 59' W
DATE (GMT) 3/18/57 TIME (GMT) 1903
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

Weather: 01, cloud coverage 1. Wind: 090°, 13 kt. Sea: 1-3 ft. Wire angle: 27°.
BT slide: 238. Dry bulb: 83.0°F. Wet bulb: 77.3°F. Barometric pressure: 1011 mb.

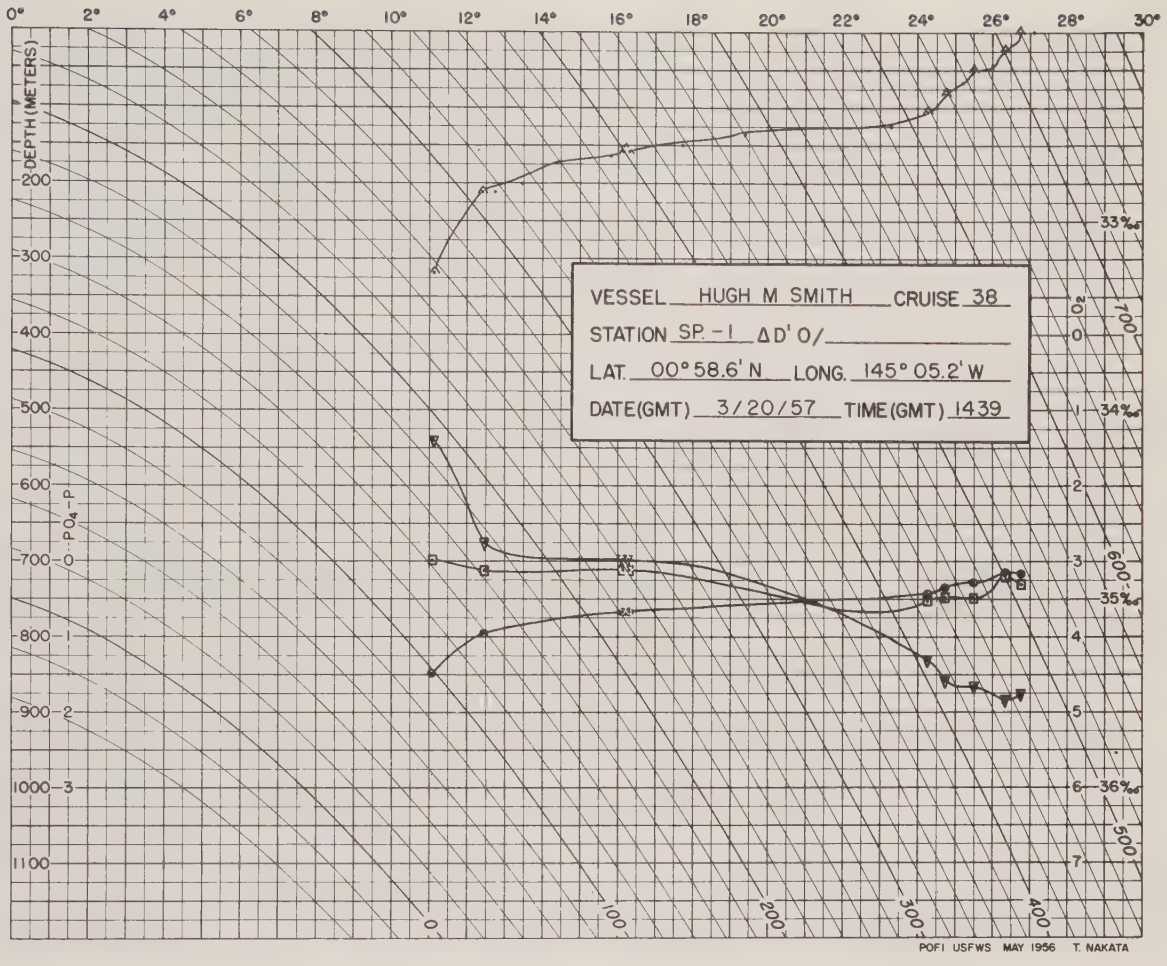
Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	27.56	35.52	492.2	4.64	1/
13	27.50	35.50	491.8	4.68	-
31	27.34	35.48	488.3	4.68	-
53	26.31	35.39	463.5	4.82	-
138	22.68	35.86	325.7	3.95	-
195	13.05	34.97	165.7	0.88	-
294	11.29	34.87	140.9	2.22	-
398	9.01	34.72	114.7	0.37	-
497	7.74	34.61	104.3	0.84	-
599	6.81	34.61	91.7	1.28	-
801	5.32	34.56	77.3	1.62	-
1007	4.64	34.54	71.4	1.89	-
1208	3.86	34.58	60.5	2.23	-

1/ Phosphate samples not identifiable


VESSEL HUGH M SMITH CRUISE 38
STATION 0-53 ΔD' O/ 1000 = 1.593
LAT. 00°01'N LONG. 145°02'W
DATE(GMT) 3/20/57 TIME(GMT) 0343
DEPTH (METERS)
P-PO4
POFI USFWS MAY 1956 T. NAKATA

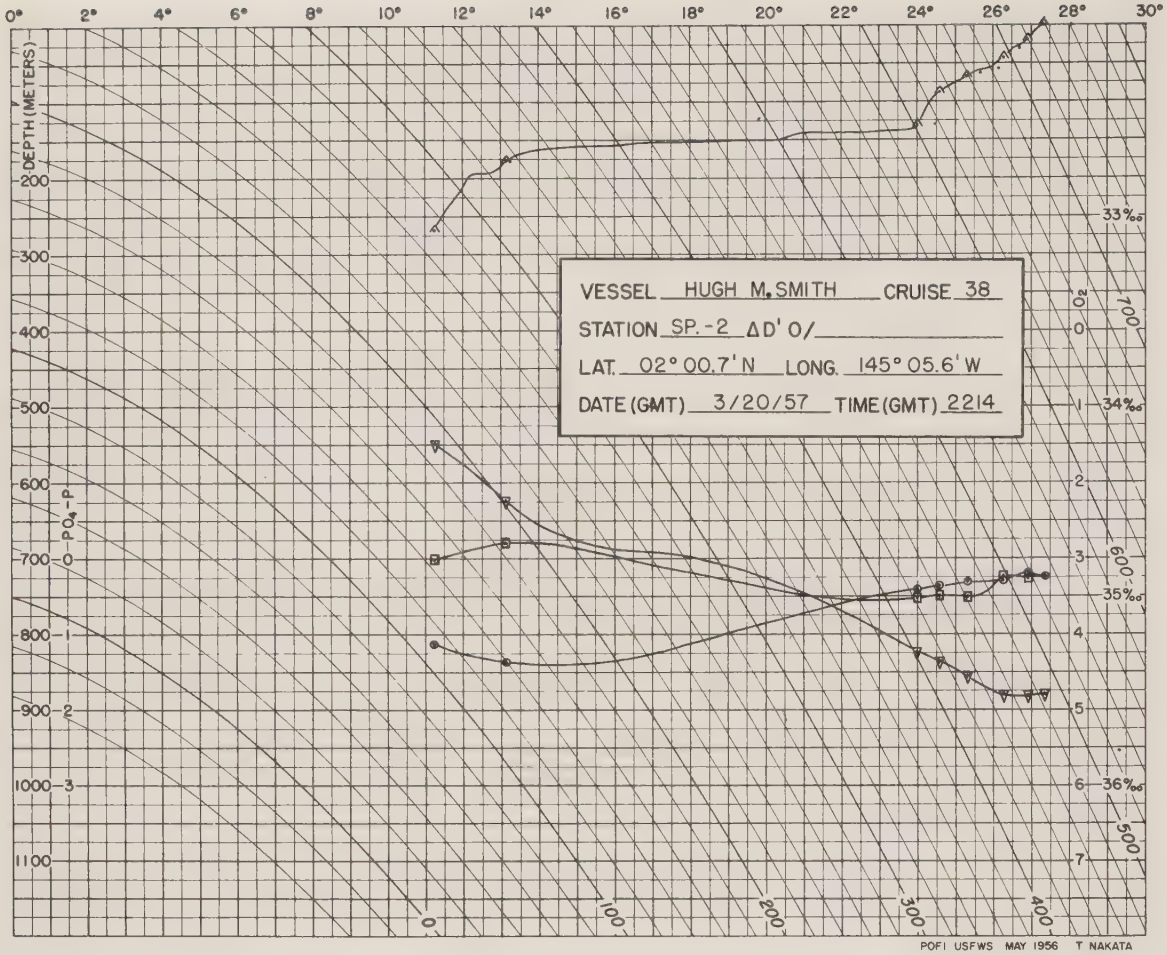
Weather: 02, cloud coverage 1. Wind: 090°, 08 kt. Sea: 1-3 ft. Wire angle: 17°.
BT slide: 245. Dry bulb: 81.4°F. Wet bulb: 76.3°F. Barometric pressure: 1009 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	27.18	35.01	517.2	4.75	0.51
50	25.06	35.03	452.4	4.50	0.64
95	24.32	35.28	413.2	3.84	0.72
119	22.68	35.07	382.3	3.86	0.80
159	18.02	35.23	252.7	3.06	1.04
217	13.00	34.94	167.1	2.97	1.27
323	11.28	34.79	146.5	1.48	1.41
434	8.89	34.67	116.4	0.86	2.63
540	7.30	34.60	98.9	1.19	2.16
648	6.66	34.56	93.4	1.48	2.78
857	5.61	34.54	82.4	1.79	2.63
857	5.40	34.54	79.7	-	-
1069	4.61	34.54	71.2	2.04	1.05
1069	4.56	34.54	70.6	-	-
1275	4.10	34.56	64.3	2.00	3.05


VESSEL HUGH M SMITH CRUISE 38
STATION SP.-1 ΔD' O/
LAT. 00° 58.6' N LONG. 145° 05.2' W
DATE(GMT) 3/20/57 TIME(GMT) 1439
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

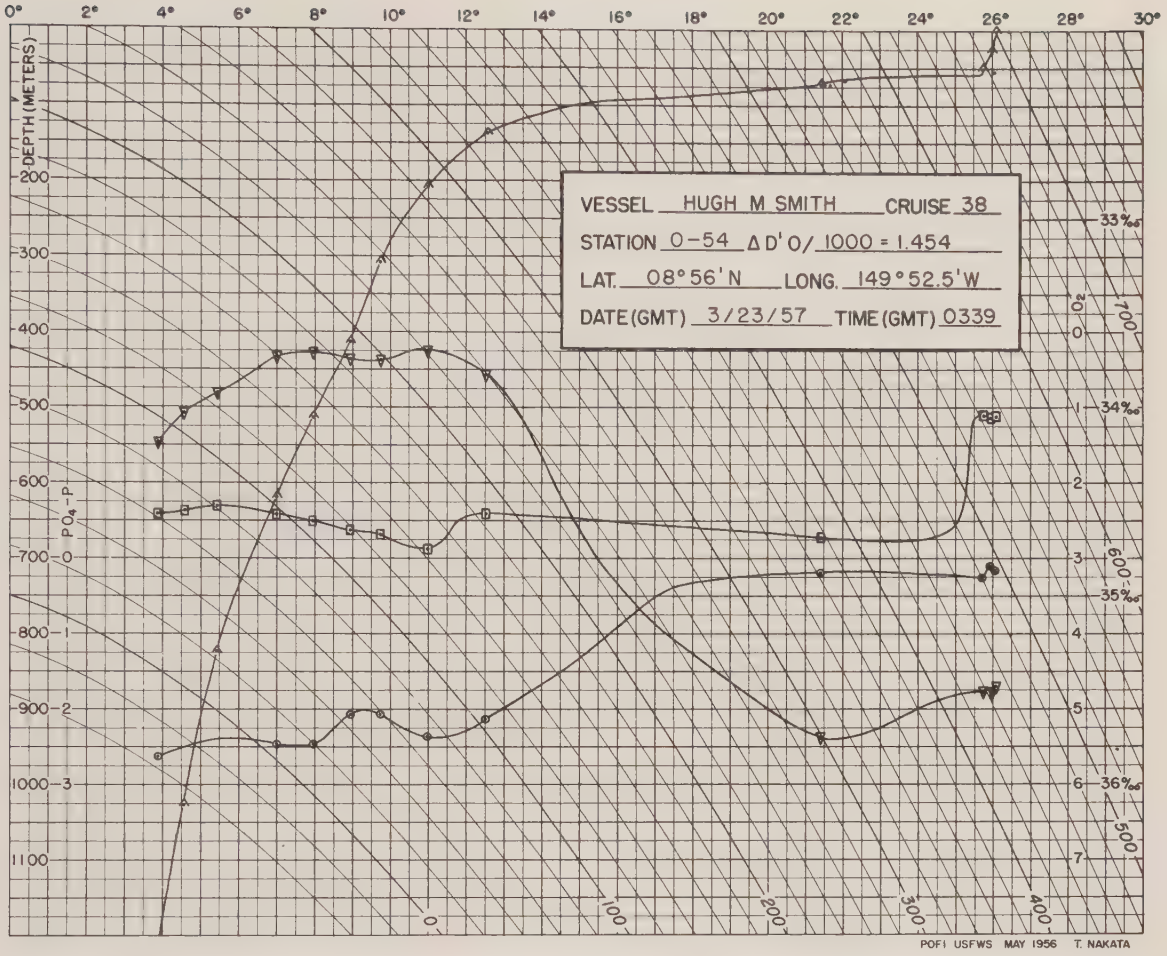
Weather: 02, cloud coverage 1. Wind: 080°, 08 kt. Sea: 1-3 ft. Wire angle: 11°.
BT slide: 249. Dry bulb: 80.2°F. Wet bulb: 76.4°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, μg at./L.
0	26.75	34.92	510.4	4.78	0.17
24	26.32	34.87	501.2	4.84	0.18
52	25.50	34.99	468.2	4.67	0.28
81	24.76	34.97	447.8	4.57	0.35
105	24.27	35.01	430.8	4.30	0.43
158	16.18	34.85	238.8	2.99	0.67
158	16.33	34.85	242.2	-	-
211	12.44	34.85	163.2	2.75	0.96
318	11.12	34.79	143.9	1.40	1.49


VESSEL HUGH M. SMITH CRUISE 38
STATION SP.-2 ΔD' O/
LAT. 02° 00.7' N LONG. 145° 05.6' W
DATE (GMT) 3/20/57 TIME (GMT) 2214
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T NAKATA

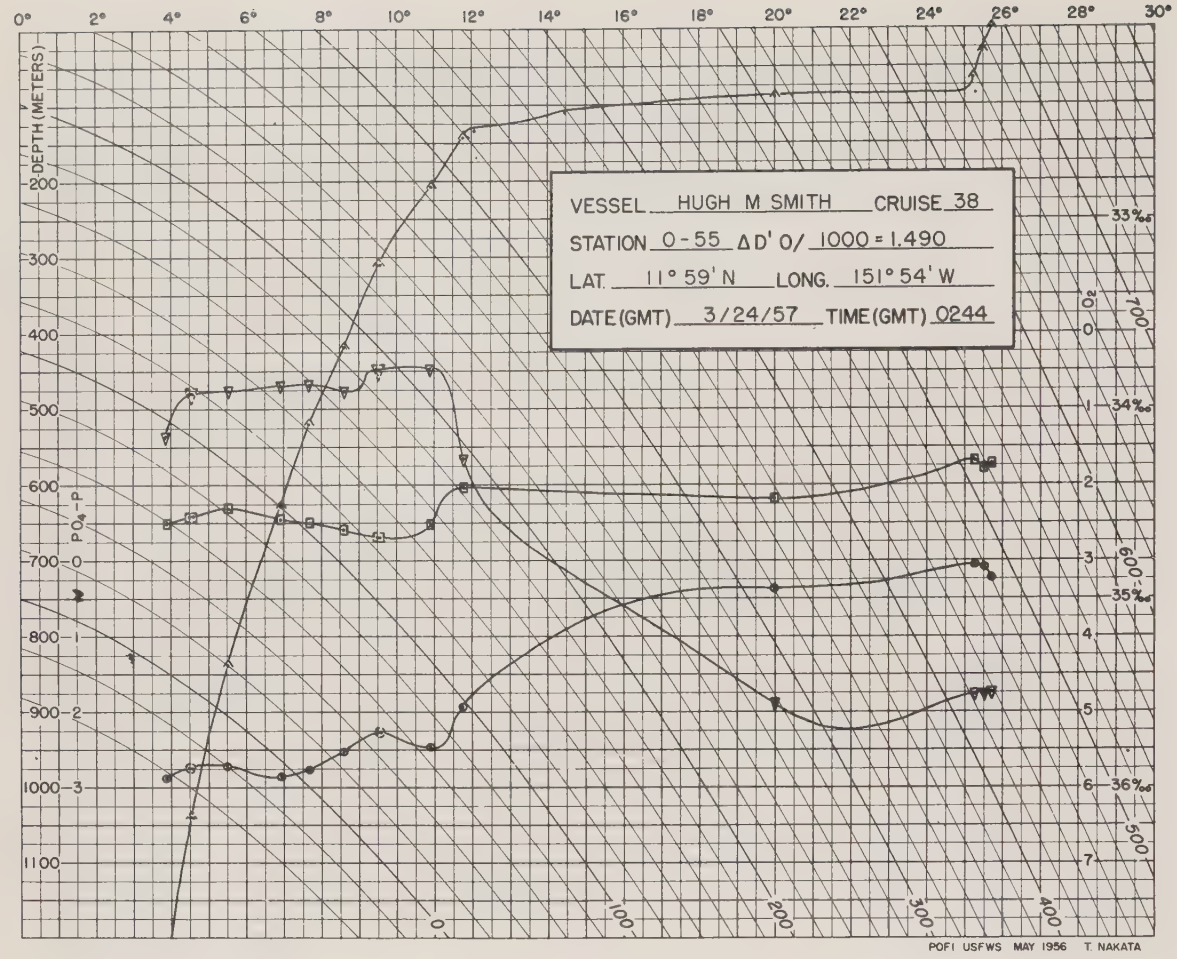
Weather: 02, cloud coverage 2. Wind: 090°, 08 kt. Sea: 1-3 ft. Wire angle: 34°.
BT slide: 251. Dry bulb: 83.2°F. Wet bulb: 76.9°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	27.38	34.90	531.3	4.80	0.24
19	26.92	34.90	517.0	4.81	0.23
43	26.26	34.90	497.2	4.80	0.28
67	25.32	35.01	461.4	4.57	0.31
87	24.60	34.99	442.0	4.36	0.38
130	24.00	35.01	423.7	4.26	0.45
175	13.18	34.72	186.4	2.25	1.37
267	11.24	34.81	144.6	1.49	1.15


VESSEL HUGH M SMITH CRUISE 38
STATION 0-54 Δ D' O/ 1000 = 1.454
LAT. 08° 56' N LONG. 149° 52.5' W
DATE (GMT) 3/23/57 TIME (GMT) 0339
DEPTH (METERS)
POFI USFWS MAY 1956 T. NAKATA

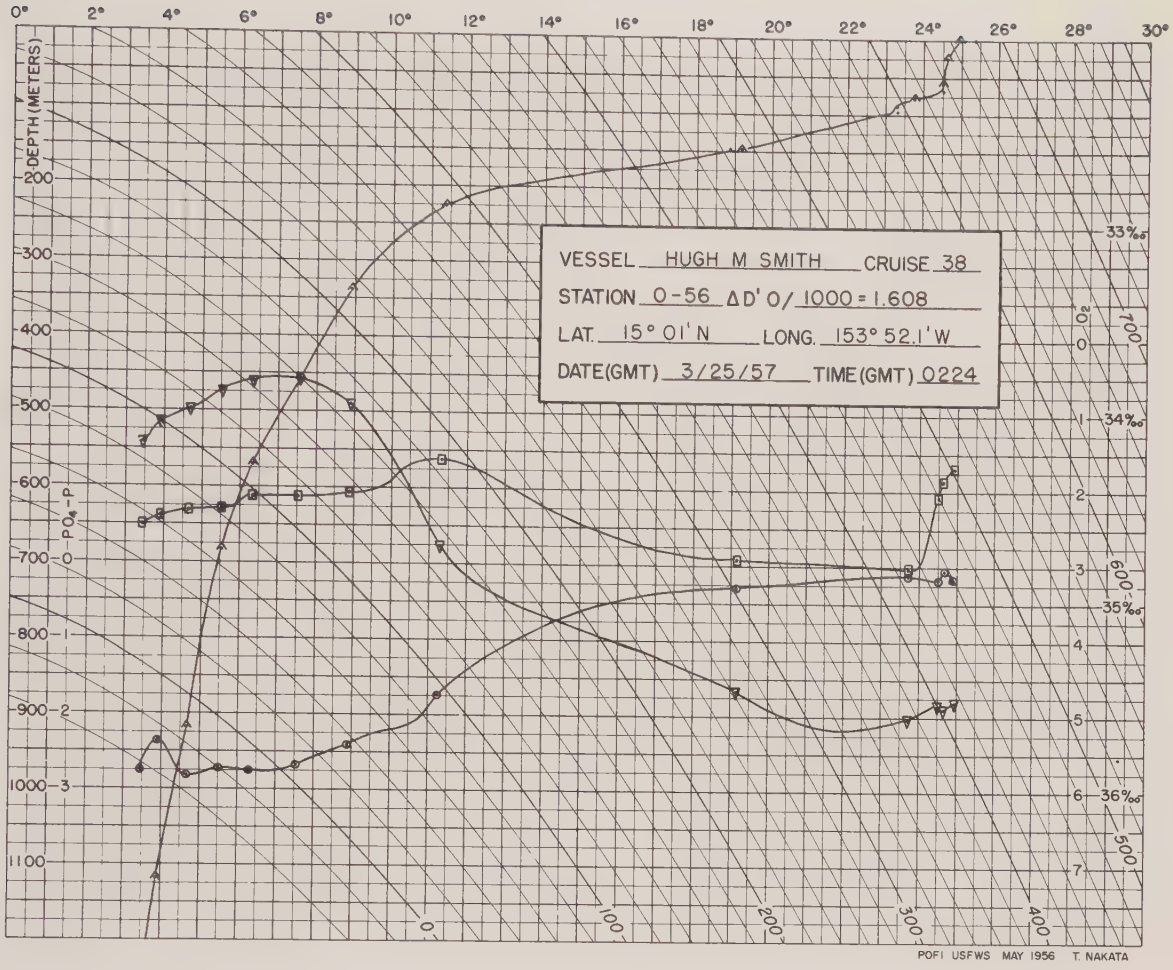
Weather: 02, cloud coverage 7. Wind: 060°, 15 kt. Sea: 3-5 ft. Wire angle: 16°.
BT slide: 261. Dry bulb: 79.0°F. Wet bulb: 76.3°F. Barometric pressure: 1009 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	26.09	34.05	553.4	4.70	0.18
25	25.94	34.05	549.0	4.78	0.10
50	25.78	34.04	545.2	4.78	0.25
70	21.42	34.69	376.7	5.37	0.18
136	12.56	34.56	186.4	0.56	2.12
206	10.98	34.74	145.0	0.23	2.37
307	9.72	34.67	129.5	0.38	2.07
412	8.92	34.65	118.5	0.34	2.06
512	7.95	34.60	107.8	0.28	2.47
617	7.00	34.56	97.7	0.31	2.47
822	5.41	34.52	81.5	0.80	NS
1024	4.59	34.54	71.0	1.07	NS
1229	3.87	34.56	62.1	1.46	2.61


VESSEL HUGH M SMITH CRUISE 38
STATION 0-55 ΔD' O/ 1000 = 1.490
LAT. 11° 59' N LONG. 151° 54' W
DATE (GMT) 3/24/57 TIME (GMT) 0244
DEPTH (METERS)
PO4-P
O2
POFI USFWS MAY 1956 T. NAKATA

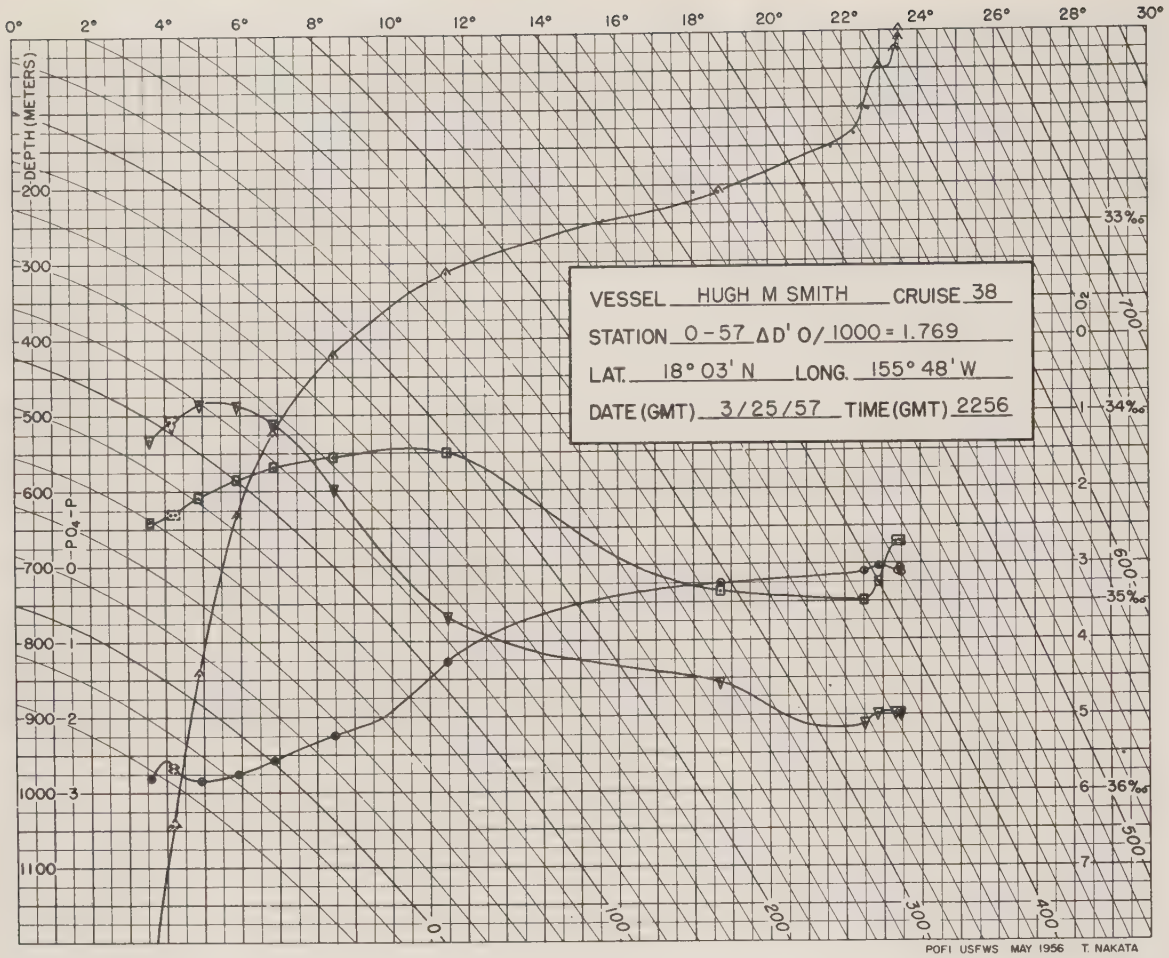
Weather: 02, cloud coverage 4. Wind: 070°, 14 kt. Sea: 3-5 ft. Wire angle: 19°.
BT slide: 265. Dry bulb: 79.2°F. Wet bulb: 75.9°F. Barometric pressure: 1010 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	25.72	34.29	525.0	4.74	0.21
30	25.48	34.31	516.5	4.76	0.10
65	25.26	34.27	513.0	4.75	0.06
86	19.96	34.47	354.7	4.88	0.37
142	11.79	34.42	182.7	1.63	1.94
207	10.90	34.61	153.2	0.43	2.47
309	9.50	34.67	126.0	0.46	2.27
309	9.57	34.67	127.0	-	-
417	8.60	34.63	115.1	0.76	2.52
519	7.68	34.60	104.0	0.68	2.76
626	6.92	34.58	95.3	0.69	2.85
836	5.54	34.52	82.8	0.76	2.71
1039	4.58	34.56	69.2	0.77	2.71
1039	4.53	34.56	68.7	-	-
1246	3.87	34.60	59.2	1.33	2.86


VESSEL HUGH M SMITH CRUISE 38
STATION 0-56 ΔD' O/ 1000 = 1.608
LAT. 15° 01' N LONG. 153° 52.1' W
DATE(GMT) 3/25/57 TIME(GMT) 0224
DEPTH (METERS)
P-PO4
POFI USFWS MAY 1956 T. NAKATA

Weather: 15, cloud coverage 8. Wind: 080°, 19 kt. Sea: 3-5 ft. Wire angle: 12°.
BT slide: 270. Dry bulb: 77.5°F. Wet bulb: 73.0°F. Barometric pressure: 1011 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	24.93	34.27	503.4	4.82	0.14
26	24.65	34.34	490.4	4.89	0.06
57	24.52	34.42	480.9	4.85	0.18
77	23.73	34.81	430.5	5.01	0.10
149	19.18	34.76	315.0	4.69	0.29
227	11.33	34.25	187.4	2.75	1.72
339	8.90	34.43	134.5	0.90	2.40
457	7.54	34.45	113.5	0.58	2.67
570	6.35	34.45	97.8	0.60	2.76
682	5.56	34.51	83.8	0.71	2.71
917	4.66	34.52	72.8	0.99	2.81
1119	3.90	34.56	62.4	1.16	2.37
1326	3.42	34.60	55.0	1.41	2.74


VESSEL HUGH M SMITH CRUISE 38
STATION 0-57 ΔD' O/1000 = 1.769
LAT. 18° 03' N LONG. 155° 48' W
DATE (GMT) 3/25/57 TIME (GMT) 2256
DEPTH (METERS)
PO4-P
POFI USFWS MAY 1956 T. NAKATA

Weather: 15, cloud coverage 8. Wind: 020°, 12 kt. Sea: 3-5 ft. Wire angle: 12°.
BT slide: 274. Dry bulb: 72.4°F. Wet bulb: 69.0°F. Barometric pressure: 1014 mb.

Depth, m.	T, °C.	S, °/oo	δ t, cl./ton	O_2, ml./L.	PO_4-P, µg at./L.
0	23.46	34.69	431.0	5.01	0.06
10	23.44	34.69	430.8	4.97	0.10
25	23.36	34.69	428.4	4.99	0.11
51	22.86	34.90	399.5	5.00	0.06
102	22.52	34.99	383.7	5.11	0.10
210	18.71	34.94	290.5	4.54	0.25
313	11.46	34.20	193.2	3.68	1.27
421	8.45	34.22	143.4	1.97	2.22
524	6.88	34.27	117.9	1.10	2.58
632	5.90	34.34	100.5	0.86	2.76
842	4.90	34.43	82.3	0.85	2.82
1045	4.23	34.52	68.8	1.06	2.66
1045	4.18	34.52	68.0	-	-
1252	3.60	34.56	59.6	1.31	2.80

Table 2.--Observations at bathythermograph lowerings, Hugh M. Smith cruise 38 (coded according to H. O. Pub. 606-c, second edition, 1956)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
1	0000	1/13	19°03'N	155°57' W	76.0	12	10	77.6	65.5	1015	58	8	5	9	3	12	3	34.88
2	0600	1/13	18°36'N	155°14' W	74.5	10	24	72.8	64.9	1019	01	8	8	9	3	10	3	34.88
3	1200	1/13	18°10'N	154°31' W	74.1	05	14	72.9	62.1	1016	02	8	7	9	3	XX	X	34.67
4	1800	1/13	17°44'N	153°47' W	75.2	06	17	71.0	64.0	1016	15	8	7	8	3	06	4	34.49
5	0000	1/14	17°16'N	153°03' W	75.3	05	17	71.0	64.9	1012	02	8	6	9	2	06	4	34.52
6	0600	1/14	16°49'N	152°17' W	74.8	05	16	71.5	64.5	1013	02	6	8	9	3	05	4	34.58
7	1200	1/14	16°20'N	151°27' W	73.7	07	14	71.1	66.9	1012	02	4,8	8	8	3	XX	X	34.70
8	1800	1/14	15°53'N	150°39' W	73.7	12	13	73.8	65.0	1012	02	4,8	8	9	2	XX	X	34.85
9	0000	1/15	15°24'N	149°51' W	75.5	07	14	75.0	69.1	1009	02	4,8	9	9	3	06	2	34.34
10	0600	1/15	14°56'N	149°02' W	75.5	11	16	75.5	69.3	1012	02	4,5,8	8	9	3	07	3	34.23
11	1200	1/15	14°28'N	148°13' W	75.8	08	13	75.5	71.0	1011	02	4,8	9	9	3	XX	X	34.22
12	1800	1/15	14°01'N	147°24' W	76.5	06	17	75.7	71.4	1012	02	4,8	7	9	3	06	3	34.11
13	0000	1/16	13°32'N	146°37' W	77.4	09	19	78.0	73.4	1010	02	6,9	6	9	3	06	3	34.16
14	0600	1/16	13°03'N	145°50' W	76.0	08	22	76.2	73.0	1011	02	4,8	6	9	3	XX	X	34.16
15	1200	1/16	12°34'N	145°04' W	78.4	07	19	75.5	72.6	1010	02	4,8	7	9	4	06	3	34.23
16	1800	1/16	12°07'N	144°22' W	75.4	08	22	76.8	73.9	1012	02	8	2	9	4	07	3	34.07
17	0000	1/17	11°40'N	143°38' W	76.6	07	16	78.0	73.9	1010	03	4,8	4	9	4	06	3	34.04
18	0600	1/17	11°15'N	142°53' W	77.0	07	22	77.8	74.5	1012	03	4,8	6	9	3	07	3	34.22
19	1200	1/17	10°50'N	142°08' W	76.9	05	28	76.5	73.3	1011	51	X	X	9	4	06	3	34.05
20	1800	1/17	10°25'N	141°24' W	76.9	05	26	77.3	73.7	1013	01	8	2	9	5	06	3	33.75
21	0000	1/18	10°00'N	140°39' W	76.0	06	25	79.3	73.4	1010	03	3,8	5	8	5	06	3	33.75
22	0600	1/18	09°35'N	139°55' W	77.0	06	24	77.1	73.0	1011	02	2,4	5	9	4	06	X	33.75
23	1200	1/18	09°10'N	139°10' W	76.8	04	28	76.2	71.9	1010	02	8	2	9	5	05	5	33.77
24	1800	1/18	08°45'N	138°26' W	79.0	05	25	79.0	74.0	1012	02	8	8	9	5	05	5	34.42
25	0000	1/19	08°18'N	137°38' W	79.3	06	20	79.4	73.7	1008	02	8	7	8	5	05	4	34.45
26	0600	1/19	07°50'N	136°47' W	79.3	05	26	78.2	74.8	1010	02	4,8	6	9	4	07	X	34.56
27	1200	1/19	07°22'N	135°55' W	79.0	02	24	79.4	75.5	1008	02	4,8	7	9	4	06	4	34.85
27A	1800	1/19	06°54'N	135°04' W	78.7	05	06	77.0	74.9	1010	51	8	7	8	3	06	3	34.56
28	0000	1/20	06°23'N	134°16' W	79.6	11	06	78.9	75.0	1008	15	8	8	9	2	06	3	34.65
29	0600	1/20	05°49'N	133°33' W	79.0	15	08	80.0	75.0	1012	02	X	9	9	2	XX	X	34.78
30	1200	1/20	05°16'N	132°50' W	78.8	13	15	79.4	74.6	1010	02	6	9	9	2	XX	X	34.78
31	1800	1/20	04°43'N	132°07' W	79.1	14	18	80.0	75.0	1012	03	8	4	9	3	12	3	34.90
32	0000	1/21	04°14'N	131°22' W	76.9	15	18	79.0	73.7	1008	01	1,8	4	9	3	15	1	34.87
33	0600	1/21	03°46'N	130°36' W	76.8	13	17	78.2	74.0	1011	01	8	1	9	3	XX	X	34.54
34	1200	1/21	03°20'N	129°51' W	77.6	13	12	77.6	71.4	1010	02	8	1	9	2	XX	X	34.56
35	1800	1/21	02°52'N	129°06' W	77.9	14	12	80.0	73.6	1014	03	8,9	2	9	2	11	1	34.67

Table 2. --Observations at bathythermograph lowerings, Hugh M. Smith cruise 38 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
36	0000	1/22	02°22'N	128°20'W	79.0	14	10	79.8	72.6	1010	01	4,8	1	9	2	11	1	34.58
37	0600	1/22	01°50'N	127°35'W	77.5	13	12	78.0	73.0	1012	02	4,8	1	9	2	XX	X	34.81
38	1200	1/22	01°18'N	126°50'W	78.5	09	10	76.2	70.5	1010	02	4	1	9	2	XX	X	34.79
39	1800	1/22	00°44'N	126°05'W	76.5	09	08	79.0	73.7	1013	02	8	2	9	2	10	2	34.97
40	0000	1/23	00°12'N	125°20'W	75.2	09	09	77.0	72.3	1010	02	8	1	9	2	10	1	35.05
41	0200	1/23	00°02'N	125°05'W	76.9	09	10	76.7	71.9	1010	02	8	1	9	2	09	1	35.07
42	0310	1/23	00°03'N	125°04'W	-	--	--	-	-	----	--	-	-	-	-	--	-	35.07
43	0900	1/23	00°03'N	124°39'W	77.4	12	14	77.0	71.5	1011	02	8	1	9	2	XX	X	-
44	1200	1/23	00°03'N	123°52'W	75.2	13	13	76.8	71.9	1010	02	8	2	9	2	XX	X	-
45	1600	1/23	00°03'N	123°19'W	75.5	09	12	76.0	72.1	1012	02	8	3	9	2	09	1	35.07
46	1700	1/23	00°03'N	123°17'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
47	1930	1/23	00°04'N	122°59'W	75.7	15	18	76.8	72.3	1013	02	8	1	9	2	15	1	35.05
48	2230	1/23	00°06'N	122°35'W	76.4	15	12	80.6	75.0	1010	02	8	2	9	2	14	1	-
49	0130	1/24	00°10'N	122°08'W	76.2	13	15	81.0	76.7	1010	02	8	1	9	2	14	1	-
50	0545	1/24	00°09'N	121°41'W	76.3	13	15	77.5	73.7	1013	02	8	1	9	2	13	1	-
51	0900	1/24	00°13'N	121°14'W	75.7	14	14	76.0	72.6	1012	02	X	1	9	2	14	1	-
52	1200	1/24	00°17'N	120°47'W	75.9	14	15	75.5	72.3	1011	02	8	3	9	3	14	1	-
53	1600	1/24	00°22'N	120°11'W	75.9	14	14	77.6	72.9	1013	02	8	2	9	3	13	1	34.43
54	1705	1/24	00°22'N	120°11'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
55	1930	1/24	00°25'N	119°51'W	76.1	13	22	78.7	73.8	1012	02	8	1	9	3	13	1	34.40
56	2230	1/24	00°21'N	119°30'W	76.4	16	22	78.8	73.4	1010	02	8	7	9	3	13	1	-
57	0130	1/25	00°15'N	119°02'W	75.5	16	14	77.7	73.3	1010	02	8	2	9	3	13	1	-
58	0600	1/25	00°07'N	118°32'W	75.5	15	15	76.4	72.6	1013	02	8	3	9	3	13	1	-
59	0900	1/25	00°02'N	118°05'W	75.4	15	14	77.0	74.5	1012	02	X	X	9	3	13	1	-
60	1200	1/25	00°04'S	117°37'W	75.0	15	14	76.6	72.9	1011	02	X	1	9	3	XX	X	34.61
61	1500	1/25	00°10'S	117°12'W	75.0	15	11	75.5	72.1	1013	03	4,8	7	9	2	14	1	34.70
62	1605	1/25	00°10'S	117°12'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
63	1830	1/25	00°14'S	116°50'W	75.5	13	13	78.8	73.7	1014	02	1,9	1	9	2	13	1	-
64	2100	1/25	00°13'S	116°31'W	76.0	15	10	79.4	73.2	1012	02	1,8	5	9	2	14	1	-
65	0000	1/26	00°10'S	116°02'W	75.8	14	14	77.3	71.9	1010	02	6	7	9	2	14	1	-
66	0300	1/26	00°07'S	115°32'W	75.4	14	14	77.7	73.5	1012	02	6	4	9	2	14	1	-
67	0700	1/26	00°03'S	115°17'W	75.4	14	12	77.8	73.6	1016	02	X	X	9	2	XX	1	-
68	1000	1/26	00°00'	114°47'W	75.3	15	10	77.0	73.5	1011	02	X	X	9	2	XX	1	-
69	1300	1/26	00°03'N	114°15'W	75.7	14	14	77.0	73.6	1011	02	X	X	9	2	XX	1	-
70	1500	1/26	00°05'N	113°54'W	75.0	14	14	77.3	72.7	1012	02	8,1	4	9	2	13	1	34.99

Table 2.--Observations at bathythermograph lowerings, Hugh M. Smith cruise 38 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
71	1555	1/26	00°05'N	113°54'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
72	1830	1/26	00°08'N	113°28'W	75.4	14	14	78.5	73.5	1012	01	8,1	1	9	2	13	1	-
73	2100	1/26	00°05'N	113°10'W	76.2	14	14	80.0	76.7	1010	01	X	0	9	2	13	1	-
74	0000	1/27	00°01'N	112°43'W	75.5	15	16	80.5	77.0	1009	02	8	1	9	2	13	1	-
75	0300	1/27	00°01'S	112°14'W	77.7	15	14	76.8	73.5	1010	02	X	X	9	2	13	1	-
76	0600	1/27	00°06'S	112°03'W	76.1	14	14	77.2	74.6	1012	02	X	X	9	2	13	1	-
77	0900	1/27	00°07'S	111°36'W	76.7	15	11	76.1	71.9	1010	02	8	2	9	2	14	1	-
78	1200	1/27	00°09'S	111°09'W	76.5	15	13	76.5	71.4	1010	03	8	5	9	2	14	1	-
79	1900	1/27	00°12'S	110°12'W	76.4	10	11	76.8	72.4	1012	01	8,6	1	9	2	10	1	-
80	2000	1/27	00°12'S	110°12'W	76.4	10	11	76.8	72.4	1012	01	8,6	1	9	2	10	1	34.42
81	2300	1/27	00°42'S	110°09'W	75.5	13	13	76.9	72.9	1009	03	4,8	7	9	2	13	1	34.42
82	0445	1/28	01°25'S	110°03'W	75.0	18	10	76.3	72.9	1011	02	8	8	9	2	10	1	35.23
83	0545	1/28	01°25'S	110°03'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
84	1000	1/28	02°04'S	110°03'W	75.0	16	14	76.0	72.9	1010	02	X	X	9	2	XX	1	-
85	1500	1/28	02°50'S	110°02'W	75.3	16	15	76.1	72.8	1012	02	8,4	3	9	3	15	1	34.87
86	1550	1/28	02°50'S	110°02'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
87	1830	1/28	03°23'S	110°02'W	75.9	15	16	76.8	72.5	1012	01	8	5	9	3	16	2	34.85
88	2330	1/28	04°07'S	109°51'W	76.2	13	12	76.6	72.1	1010	01	8,4,1	5	9	3	15	2	-
89	0300	1/29	Q4°43'S	109°45'W	76.2	16	10	76.8	72.9	1012	02	X	X	9	3	15	2	-
90	0550	1/29	04°58'S	109°44'W	75.7	15	15	75.7	72.4	1012	02	8	2	9	3	15	2	34.90
91	0645	1/29	04°58'S	109°44'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
92	1200	1/29	05°40'S	109°51'W	76.0	12	14	75.1	71.1	1011	02	X	3	9	3	14	2	-
93	1600	1/29	06°31'S	109°58'W	76.7	11	12	77.6	72.0	1012	02	8	2	9	2	11	1	-
94	1830	1/29	06°58'S	110°02'W	76.7	12	14	77.9	72.1	1012	01	8	1	9	3	12	1	-
95	2100	1/29	06°58'S	109°56'W	77.4	12	12	76.9	72.0	1011	02	8	3	9	3	12	2	34.97
96	2200	1/29	06°58'S	109°56'W	77.4	12	12	76.9	72.0	1011	02	8	3	9	3	12	2	-
97	0200	1/30	07°42'S	110°04'W	76.9	12	14	76.5	71.5	1010	02	8	2	9	3	12	2	-
98	0600	1/30	08°09'S	110°01'W	76.5	10	11	76.1	70.7	1012	02	X	X	9	3	XX	X	-
99	1100	1/30	09°01'S	110°00'W	76.6	15	10	75.4	70.5	1011	02	X	1	9	2	XX	X	35.46
100	1150	1/30	09°01'S	110°00'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
101	1600	1/30	09°44'S	110°00'W	76.9	11	13	72.9	73.0	1014	01	8	2	9	2	15	3	-
102	1830	1/30	10°10'S	110°00'W	76.8	10	10	77.6	72.1	1013	02	8	1	9	2	15	3	35.48
103	2230	1/30	10°45'S	110°00'W	78.4	11	07	76.8	69.9	1012	02	8	1	9	2	12	2	-
104	0030	1/31	11°01'S	110°00'W	78.0	14	04	78.2	71.2	1011	02	8	1	9	2	14	2	35.61
105	0130	1/31	11°01'S	110°00'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-

Table 2.--Observations at bathythermograph lowerings, Hugh M. Smith cruise 38 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
106	0600	1/31	11°30'S	110°03'W	77.2	11	06	76.1	69.0	1012	02	8	3	9	2	12	2	-
107	1000	1/31	12°09'S	110°04'W	77.1	14	08	71.8	69.9	1012	02	X	1	9	2	XX	X	-
108	1905	1/31	13°06'S	110°03'W	80.9	14	03	79.3	70.9	1012	02	8	1	9	1	16	2	35.81
109	2030	1/31	13°06'S	110°03'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
110	1545	2/1	13°32'S	110°09'W	78.9	03	10	77.0	75.0	1012	01	6,8	6	0	2	13	2	-
111	1935	2/1	13°32'S	110°12'W	79.5	08	08	79.0	74.0	1011	02	6,8	6	9	1	16	4	35.77
112	2030	2/1	13°36'S	110°12'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
113	0000	2/2	13°34'S	110°15'W	79.4	04	06	77.6	73.0	1009	18	6,8	7	9	2	12	2	-
114	1507	2/2	13°37'S	110°25'W	79.1	05	10	79.0	72.9	1010	02	6,8	3	9	2	01	-	-
115	1522	2/2	13°37'S	110°25'W	79.1	05	08	79.0	72.9	1010	02	6,8	3	9	2	02	2	-
116	1537	2/2	13°37'S	110°25'W	79.1	05	10	79.0	72.9	1010	02	6,8	3	9	2	22	2	-
117	1552	2/2	13°37'S	110°25'W	78.9	05	06	79.0	72.9	1010	02	6,8	3	9	2	22	2	-
118	1930	2/2	13°38'S	110°28'W	79.3	07	12	78.4	73.4	1010	02	8	2	9	3	12	2	35.86
119	2030	2/2	13°38'S	110°28'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
120	2000	2/3	13°39'S	110°39'W	80.0	08	05	80.0	72.8	1012	02	8	2	9	2	15	2	35.93
121	2100	2/3	13°39'S	110°39'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
122	1945	2/4	13°38'S	111°02'W	79.9	09	10	79.7	73.8	1012	02	8	2	9	2	11	1	-
123	1950	2/5	13°45'S	111°15'W	79.9	08	11	80.4	75.0	1011	02	8	3	9	2	08	1	35.99
124	2050	2/5	13°45'S	111°15'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
125	1600	2/6	13°48'S	111°44'W	79.9	12	12	80.1	76.5	1012	01	8	3	9	2	08	1	-
126	1950	2/6	13°48'S	111°48'W	80.1	07	12	80.0	73.8	1010	02	8	2	9	3	08	1	35.97
127	2050	2/6	13°48'S	111°48'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
128	1945	2/7	13°60'S	112°01'W	79.4	09	18	77.9	73.3	1011	03	8	7	9	3	09	1	35.88
129	2040	2/7	13°60'S	112°01'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
130	1930	2/8	14°06'S	112°18'W	80.2	09	13	79.7	74.2	1012	01	8	3	9	3	09	1	-
131	1950	2/9	14°10'S	112°33'W	80.1	09	17	79.8	73.2	1011	02	8	2	9	3	16	5	36.00
132	2050	2/9	14°10'S	112°33'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
133	1950	2/10	14°13'S	112°45'W	80.1	09	16	80.0	73.5	1010	02	8	3	9	3	16	4	36.08
134	2045	2/10	14°13'S	112°45'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
135	1945	2/11	14°15'S	112°58'W	80.3	07	11	79.6	73.2	1011	03	8	3	9	3	17	4	36.02
136	2040	2/11	14°15'S	112°58'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
137	1915	2/13	14°21'S	113°27'W	80.3	06	17	80.5	78.4	1012	02	8,1	4	9	3	12	4	-
138	1915	2/14	14°23'S	113°44'W	80.4	09	15	80.1	77.8	1011	02	8,1	7	9	3	12	4	-
139	1930	2/15	14°24'S	114°07'W	80.2	08	12	78.2	72.9	1011	16	8	7	9	3	12	4	-
140	1940	2/16	14°18'S	114°28'W	80.4	08	12	80.7	73.6	1011	01	8,1	2	9	3	12	4	36.00

Table 2.--Observations at bathythermograph lowerings, Hugh M. Smith cruise 38 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
141	2030	2/16	14°18'S	114°28'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
142	0140	2/18	14°12'S	115°17'W	81.2	21	03	81.2	76.5	1012	02	8	2	9	2	10	1	36.00
143	1455	2/18	14°00'S	116°17'W	80.8	07	13	81.7	77.5	1012	02	8,1	6	9	3	10	3	35.91
144	2000	2/18	13°56'S	116°40'W	81.0	04	16	82.8	78.7	1012	03	8,4	7	9	3	10	3	35.82
145	1500	2/19	13°37'S	118°16'W	80.1	10	17	81.9	77.8	1012	01	8,1	6	9	3	10	3	35.79
146	2040	2/20	12°46'S	119°35'W	80.7	06	14	83.1	79.8	1012	03	8	6	9	3	10	3	35.81
147	0750	2/25	00°00'	129°59'W	77.6	09	08	77.8	74.7	1012	02	8	2	9	2	09	1	34.94
148	0850	2/25	00°00'	130°00'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
149	1400	2/25	00°47'S	129°56'W	77.1	11	10	76.7	74.1	1011	02	8	1	9	2	10	1	-
150	1940	2/25	01°35'S	129°51'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
151	2030	2/25	01°35'S	129°51'W	78.4	13	09	80.0	75.5	1011	03	8,4	6	9	2	06	1	34.96
152	0300	2/26	02°37'S	129°53'W	79.5	11	07	80.0	75.0	1010	02	8,4	3	9	2	11	2	-
153	0650	2/26	03°00'S	129°50'W	79.0	11	08	79.2	75.7	1012	02	8	3	9	2	35	2	-
154	0755	2/26	03°00'S	129°50'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
155	1500	2/26	04°11'S	130°02'W	79.1	12	08	78.7	75.2	1011	02	8	2	9	2	35	2	35.17
156	2030	2/26	04°59'S	130°05'W	80.5	10	06	80.2	74.9	1012	02	8	4	9	2	12	2	35.14
157	2120	2/26	04°59'S	130°05'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
158	0200	2/27	05°48'S	130°11'W	80.4	11	07	80.7	76.0	1009	02	8	2	9	2	11	1	-
159	0805	2/27	06°33'S	129°59'W	79.8	11	10	79.3	75.8	1012	02	X	1	9	2	XX	1	35.19
160	0855	2/27	06°33'S	129°59'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
161	1500	2/27	07°33'S	130°03'S	80.0	09	10	79.5	75.0	1011	02	8	4	9	2	11	1	35.25
162	2030	2/27	08°29'S	130°03'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
163	2115	2/27	08°29'S	130°03'W	81.0	09	10	80.3	75.1	1011	02	8	1	9	2	16	1	35.46
164	0100	2/28	09°08'S	130°04'W	81.8	10	09	80.9	74.8	1010	02	8	1	9	2	13	1	35.50
165	0755	2/28	10°01'S	129°55'W	82.0	09	07	81.0	75.1	1012	02	8	1	9	2	13	1	35.70
166	0850	2/28	10°01'S	129°55'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
167	1400	2/28	10°54'S	129°59'W	82.5	10	08	80.0	74.4	1010	02	8,4	5	9	2	16	1	-
168	1900	2/28	11°48'S	129°58'W	82.7	07	11	83.0	75.2	1012	02	8	1	9	2	16	1	35.90
169	1950	2/28	11°48'S	129° 58'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
170	2250	2/28	12°12'S	130°01'W	85.5	08	04	82.5	77.6	1010	03	8	7	9	0	13	2	36.09
171	0815	3/1	13°33'S	130°01'W	83.7	25	04	80.4	74.1	1012	03	8	5	9	2	16	1	35.95
172	0905	3/1	13°33'S	130°01'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
173	1500	3/1	14°32'S	129°56'W	82.2	XX	00	78.0	74.8	1012	03	4,8	8	9	1	31	1	35.99
174	1845	3/1	15°10'S	129°54'W	83.0	30	02	81.9	75.2	1012	15	8,4	5	9	1	--	-	35.84
175	1930	3/1	15°10'S	129°54'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-

Table 2.--Observations at bathythermograph lowerings, Hugh M. Smith cruise 38 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
176	0000	3/2	15°50'S	129°57'W	82.9	36	11	81.6	76.6	1010	21	8	5	9	2	30	1	-
177	0400	3/2	16°29'S	130°03'W	83.2	31	05	81.2	73.1	1012	15	8	3	9	1	22	1	-
178	0450	3/2	16°29'S	130°03'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
179	0900	3/2	16°56'S	130°07'W	82.6	26	04	80.8	77.1	1012	00	X	X	9	1	XX	1	36.09
180	1630	3/2	18°03'S	130°03'W	82.5	10	07	83.0	79.4	1012	02	8,1	2	9	1	20	1	36.31
181	1715	3/2	18°04'S	130°02'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
182	2100	3/2	18°08'S	130°40'W	82.4	33	10	83.5	78.2	1012	02	8	4	9	2	30	1	36.18
183	0200	3/3	18°05'S	131°18'W	82.3	32	12	82.3	75.2	1010	01	8,4	5	9	3	32	3	-
184	0445	3/3	18°03'S	131°53'W	82.3	30	17	81.3	74.4	1012	20	8	3	9	3	33	3	36.31
185	0530	3/3	18°03'S	131°53'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
186	1000	3/3	17°56'S	132°21'W	82.5	30	06	80.2	73.7	1012	13	8	3	9	3	32	3	-
187	1400	3/3	17°54'S	132°58'W	81.7	10	05	76.6	72.3	1012	50	4,8	7	8	3	32	3	-
188	1800	3/3	17°52'S	133°36'W	81.8	31	16	79.6	76.5	1013	15	8	7	8	3	32	3	36.31
189	2100	3/3	17°49'S	134°01'W	82.7	35	18	80.6	76.7	1012	51	8,6	9	8	3	34	3	36.24
190	2155	3/3	17°49'S	134°01'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
191	0100	3/4	17°50'S	134°31'W	82.3	33	18	79.5	77.5	1010	50	6	9	8	4	33	3	-
192	0800	3/4	17°43'S	135°16'W	82.0	34	16	80.0	76.5	1012	21	6	9	8	4	33	3	-
193	1615	3/4	17°40'S	136°16'W	81.7	32	22	80.1	74.2	1010	21	6	9	8	4	33	3	36.15
194	1710	3/4	17°40'S	136°16'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
195	2200	3/4	17°37'S	136°50'W	81.7	33	23	81.2	76.0	1009	15	5,8	9	8	4	33	3	-
196	0300	3/5	17°34'S	137°32'W	81.8	32	22	80.5	76.2	1008	15	8,4	8	8	4	32	3	-
197	0740	3/5	17°31'S	138°10'W	81.8	32	18	80.8	76.3	1010	15	8	5	8	4	32	3	36.09
198	0835	3/5	17°31'S	138°10'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
199	1400	3/5	17°28'S	138°55'W	81.7	33	14	80.0	77.8	1008	01	8	3	9	3	XX	3	-
200	1800	3/5	17°37'S	139°30'W	81.8	35	18	81.1	75.7	1010	15	3,8	6	9	3	34	1	-
201	2100	3/5	17°43'S	139°54'W	82.4	35	19	82.9	76.6	1009	01	4,8	5	9	3	34	1	36.26
202	2200	3/5	17°43'S	139°54'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
203	0400	3/6	17°56'S	140°41'W	82.6	34	06	81.8	75.5	1010	02	8	8	7	2	XX	X	-
204	2030	3/6	18°00'S	140°57'W	82.6	30	16	80.7	79.0	1011	01	8,1	4	9	2	30	1	-
205	0800	3/7	17°55'S	142°35'W	82.7	31	14	83.4	76.9	1011	02	X	9	9	2	30	1	-
206	1500	3/7	17°59'S	143°21'W	83.0	30	22	80.8	76.9	1010	00	8,4	7	9	3	30	1	-
207	2030	3/7	18°04'S	144°12'W	82.8	32	22	80.8	75.2	1011	02	6,8	8	9	4	32	3	36.35
208	2120	3/7	18°04'S	144°12'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
209	0300	3/8	18°03'S	145°02'W	82.5	30	21	81.9	76.2	1009	02	8,5	8	9	4	31	3	-
210	1130	3/8	18°00'S	145°34'W	83.2	28	15	82.2	76.5	1010	01	8,5	6	9	4	30	3	36.38

Table 2.--Observations at bathythermograph lowerings, Hugh M. Smith cruise 38 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
211	1230	3/8	18°00'S	145°34'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
212	1705	3/8	17°59'S	146°54'W	83.1	27	11	81.6	76.9	1010	02	1,8	6	9	3	27	1	-
213	2130	3/8	17°57'S	147°34'W	83.8	27	10	84.7	78.0	1009	02	1,8	5	9	3	27	1	-
214	0100	3/9	17°57'S	148°06'W	83.2	30	12	82.5	79.1	1008	51	6,8	8	7	3	32	1	36.26
215	0200	3/9	17°57'S	148°06'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
216	1120	3/15	13°55'S	145°09'W	83.5	10	12	81.4	78.0	1010	02	6,8	7	9	2	13	1	36.24
217	1230	3/15	13°55'S	145°09'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
218	1700	3/15	13°10'S	145°04'W	83.7	09	07	82.5	79.0	1011	02	6,8	7	9	2	--	-	-
219	2200	3/15	12°27'S	144°59'W	84.5	09	08	85.0	79.0	1010	02	2,4,8	7	9	2	09	1	36.13
220	2250	3/15	12°27'S	144°59'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
221	0400	3/16	11°39'S	145°01'W	84.5	06	10	84.5	79.9	1010	02	2,4,8	7	9	2	10	1	-
222	1015	3/16	11°00'S	144°57'W	83.7	09	08	82.3	76.4	1010	01	8	3	9	2	09	1	35.99
223	1110	3/16	11°00'S	144°57'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
224	1630	3/16	10°10'S	145°04'W	83.9	06	11	82.9	78.7	1011	15	8	2	9	2	07	1	-
225	2200	3/16	09°23'S	145°09'W	84.0	05	09	85.4	76.8	1012	02	8,1	2	9	2	06	1	35.86
226	2255	3/16	09°23'S	145°09'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
227	0400	3/17	08°33'S	145°11'W	84.0	03	05	83.9	77.2	1011	02	8,3	6	9	1	10	1	-
228	0805	3/17	08°05'S	145°12'W	82.8	01	05	81.5	76.3	1012	01	8,1	1	9	2	09	1	-
229	0900	3/17	08°04'S	145°12'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
230	1630	3/17	06°53'S	145°10'W	82.0	03	05	81.0	77.0	1012	02	8,1	2	9	2	00	1	35.79
231	1915	3/17	06°31'S	145°01'W	82.1	06	08	83.2	76.7	1013	02	8,1	2	9	2	06	1	35.53
232	2010	3/17	06°31'S	145°01'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
233	0100	3/18	05°48'S	145°03'W	83.0	08	09	82.0	75.9	1010	02	8,1	3	9	2	06	1	-
234	0600	3/18	05°00'S	145°00'W	83.7	09	12	81.0	76.7	1010	02	8	2	9	2	06	1	35.37
235	1250	3/18	05°00'S	145°00'W	83.7	09	12	81.0	76.7	1010	02	8	2	9	2	06	1	-
236	1200	3/18	04°31'S	144°56'W	81.9	09	15	80.7	76.2	1010	02	8	2	9	2	06	1	-
237	1600	3/18	03°54'S	144°59'W	81.7	08	09	80.7	76.9	1010	00	8	4	9	2	06	1	-
238	1825	3/18	03°32'S	144°59'W	81.7	09	13	83.0	77.3	1011	01	8	1	9	2	09	1	35.52
239	1925	3/18	03°32'S	144°59'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
240	0400	3/19	02°24'S	144°54'W	81.3	09	13	81.1	76.8	1008	03	8	3	9	3	09	1	-
241	1030	3/19	01°46'S	144°54'W	80.4	10	11	80.9	77.5	1008	02	8	2	9	2	09	1	35.12
242	1135	3/19	01°46'S	144°54'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
243	2045	3/19	00°47'S	144°58'W	81.0	08	06	83.8	78.8	1010	02	8	4	9	1	09	1	-
244	0315	3/20	00°01'N	145°02'W	81.1	09	08	81.4	76.3	1009	02	8	1	9	2	06	1	35.01
245	0410	3/20	00°01'N	145°02'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-

Table 2.--Observations at bathythermograph lowerings, Hugh M. Smith cruise 38 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
246	0715	3/20	00°16'N	145°00'W	80.4	09	09	81.5	77.2	1010	02	8	1	9	2	08	1	-
247	0920	3/20	00°31'N	145°02'W	80.3	09	09	81.2	77.0	1010	02	8	1	9	2	08	1	-
248	1130	3/20	00°45'N	145°04'W	80.2	07	08	80.0	76.2	1009	02	8	1	9	2	08	1	34.92
249	1415	3/20	00°59'N	145°05'W	80.0	08	08	80.2	76.4	1010	02	8	1	9	2	08	1	-
250	1450	3/20	00°59'N	145°05'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
251	2150	3/20	02°01'N	145°06'W	81.9	09	08	83.2	76.9	1011	02	8	2	9	2	06	1	-
252	0400	3/21	02°49'N	145°39'W	81.2	05	07	82.7	73.9	1010	02	8	2	9	2	04	3	34.94
253	1000	3/21	03°38'N	146°13'W	80.5	05	11	80.4	77.7	1010	02	8	2	9	2	04	3	34.97
254	1600	3/21	04°27'N	146°46'W	80.4	08	10	80.0	76.0	1010	03	8	2	9	2	04	3	34.99
255	2200	3/21	05°16'N	147°11'W	82.0	07	06	83.2	78.9	1010	02	6,8	6	9	2	05	3	34.97
256	0400	3/22	06°00'N	147°45'W	81.7	07	14	81.0	78.0	1010	02	4,8	5	9	1	05	2	34.90
257	1000	3/22	06°45'N	148°14'W	81.1	06	14	80.9	77.9	1011	02	8,9	3	9	2	05	2	34.81
258	1610	3/22	07°31'N	148°46'W	80.0	06	18	79.4	75.7	1010	15	8,4	6	9	3	06	3	34.60
259	2200	3/22	08°19'N	149°17'W	79.0	05	14	81.9	77.8	1010	03	6	8	8	3	06	3	34.14
260	0315	3/23	08°56'N	149°52'W	79.0	06	15	79.0	76.3	1009	02	4,6	7	9	3	06	3	-
261	0415	3/23	08°57'N	149°54'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
262	1000	3/23	09°41'N	150°22'W	78.5	08	15	79.3	76.9	1010	02	X	X	9	3	XX	X	34.09
263	1645	3/23	10°41'N	150°59'W	78.8	07	15	78.9	75.9	1011	02	8	4	9	3	07	3	34.20
264	2200	3/23	11°23'N	151°26'W	79.1	07	16	81.3	77.9	1011	02	8,4	5	9	3	08	3	34.34
265	0215	3/24	11°59'N	151°54'W	78.4	07	14	79.2	75.9	1010	02	8,4	4	9	3	07	3	-
266	0305	3/24	11°59'N	151°54'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
267	0900	3/24	12°58'N	152°33'W	77.9	09	12	78.7	76.3	1013	03	X	7	9	3	XX	X	34.25
268	1615	3/24	13°47'N	153°04'W	77.1	07	21	74.0	73.5	1012	61	8,6	7	8	3	07	3	34.25
269	2200	3/24	14°37'N	153°36'W	76.9	08	17	76.4	75.0	1013	51	6	8	8	3	08	3	34.29
270	0055	3/25	15°01'N	153°52'W	76.9	08	19	77.5	73.0	1011	15	5,8	8	9	3	08	3	-
271	0150	3/25	15°01'N	153°52'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-
272	0800	3/25	16°02'N	154°31'W	76.3	11	12	74.1	72.9	1014	61	X	9	7	3	XX	X	34.20
273	1600	3/25	17°10'N	155°14'W	75.3	36	10	72.8	69.8	1012	51	0,9	8	8	2	36	1	34.38
274	2230	3/25	18°03'N	155°48'W	74.0	02	12	72.4	69.0	1014	15	0,8,4	8	9	3	02	1	-
275	2320	3/25	18°03'N	155°48'W	-	--	--	-	-	----	--	-	-	-	-	--	-	-

Table 3.--Observations at bathythermograph lowerings, Charles H. Gilbert cruise 32 (coded according to H. O. Pub. 606-c, second edition, 1956)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell	
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.
1	0800	1/12	21°25'N	158°16' W	75.7	09	16	73.8	65.2	1020	00	X	X	X	3	11	1
2	0955	1/12	21°25'N	158°26' W	76.0	09	16	73.8	65.1	1019	00	X	X	X	3	09	1
3	1145	1/12	21°25'N	158°36' W	75.8	10	18	73.8	66.2	1021	00	X	X	X	4	09	3
4	1300	1/12	21°25'N	158°46' W	75.9	12	16	74.5	67.8	1018	00	X	X	X	4	09	4
5	1410	1/12	21°25'N	158°56' W	76.1	08	15	74.2	66.1	1020	00	X	X	X	4	XX	4
6	1510	1/12	21°34'N	158°55' W	75.9	07	14	73.8	65.9	1020	00	X	X	X	4	XX	4
7	1615	1/12	21°35'N	158°46' W	75.4	07	14	73.3	65.7	1020	00	X	X	X	4	XX	4
8	1800	1/12	21°25'N	158°36' W	75.7	09	21	72.5	65.8	1019	00	3	1	7	4	07	4
9	1920	1/12	21°36'N	158°26' W	75.3	10	20	72.3	65.3	1022	03	3,4	2	7	4	07	4
10	2030	1/12	21°40'N	158°16' W	75.2	10	20	74.0	64.2	1020	02	3,4	2	7	4	07	4
11	2137	1/12	21°43'N	158°07' W	75.0	10	17	75.5	64.5	1006	02	3,4	3	7	4	06	4
12	2300	1/12	21°47'N	157°56' W	74.7	10	20	76.0	66.5	1019	02	3,4	3	7	5	08	4
13	0045	1/13	21°57'N	157°56' W	74.8	07	19	79.9	68.3	1006	03	3,4	4	7	5	08	4
14	0155	1/13	22°07'N	157°56' W	75.6	11	20	73.0	65.0	1020	03	3,4	3	7	5	08	5
15	0310	1/13	22°17'N	157°56' W	74.4	09	17	73.0	65.2	1021	02	3,4	3	7	5	10	5
16	0440	1/13	22°16'N	157°47' W	74.0	06	17	73.5	64.0	1002	XX	X	X	X	4	10	5
17	0630	1/13	22°06'N	157°47' W	74.0	10	19	72.0	64.5	1019	01	1	3	7	4	09	4
18	0800	1/13	21°28'N	157°46' W	74.4	10	22	73.0	64.5	1019	01	X	X	X	4	09	4
19	0910	1/13	21°46'N	157°44' W	74.3	10	17	75.0	65.7	1019	02	X	X	X	5	09	4
20	1035	1/13	21°37'N	157°46' W	74.3	09	18	72.5	65.7	1018	02	X	X	X	5	09	4
21	1730	1/13	20°53'N	157°13' W	74.3	09	02	72.5	64.0	1016	01	4,1	2	8	1	XX	X
22	2330	1/13	20°12'N	156°48' W	74.5	09	18	73.8	65.4	1014	03	0	5	8	3	06	1
23	0530	1/14	19°31'N	156°18' W	74.9	09	01	74.6	65.2	1014	03	6	9	7	1	04	1
24	1130	1/14	18°44'N	155°53' W	74.7	09	21	72.0	66.3	1014	00	X	X	X	2	12	3
25	1700	1/14	17°55'N	155°27' W	75.4	08	16	73.0	65.5	1012	03	6,8	6	5	3	09	1
26	2330	1/14	17°08'N	155°02' W	75.9	02	10	75.9	68.0	XXX	03	6	7	6	3	05	2
27	0530	1/15	16°25'N	154°32' W	75.8	10	11	75.3	68.2	1012	15	6,9	6	9	2	08	1
28	1135	1/15	15°43'N	154°01' W	75.8	13	11	75.0	70.3	1011	01	6,8	4	9	2	08	1
29	1730	1/15	15°11'N	153°36' W	75.4	13	11	76.0	71.9	1011	03	6,8	8	8	3	11	2
30	2330	1/15	14°19'N	153°01' W	75.3	09	19	77.2	71.8	1009	02	5,8	6	8	3	09	2
31	0530	1/16	13°34'N	152°37' W	75.9	11	16	77.9	74.0	1010	02	X	X	8	3	09	2
32	1130	1/16	12°50'N	152°13' W	75.8	11	15	77.0	74.1	1010	02	X	X	7	4	10	2
33	1730	1/16	12°05'N	151°49' W	76.4	10	16	78.0	73.9	1011	01	4,6	7	8	3	10	3
34	2030	1/16	11°42'N	151°37' W	76.7	08	14	78.7	74.6	1015	02	4,8	5	8	3	09	3
35	2330	1/16	11°20'N	151°26' W	76.9	09	13	79.0	74.5	1011	02	4,6	5	8	3	09	3

Table 3.--Observations at bathythermograph lowerings, Charles H. Gilbert cruise 32 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell	
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.
36	0230	1/17	10°58'N	151°14'W	77.0	09	14	79.0	74.7	1010	02	4,6	5	8	3	09	3
37	0530	1/17	10°37'N	151°02'W	76.7	08	16	78.0	74.6	1012	02	X	3	8	3	09	3
38	0830	1/17	10°17'N	150°51'W	76.8	06	16	78.0	74.7	1012	02	X	3	8	3	09	3
39	1130	1/17	09°55'N	150°40'W	78.1	07	22	78.9	74.9	1011	00	8	6	8	3	10	3
40	1430	1/17	09°34'N	150°28'W	78.5	07	22	79.0	74.9	1010	01	8	3	9	3	10	3
41	1730	1/17	09°13'N	150°17'W	79.2	08	21	80.2	75.0	1012	02	6,8	3	9	4	07	4
42	2030	1/17	08°52'N	150°06'W	80.2	06	20	81.0	76.8	1012	02	6	6	9	4	07	4
43	2330	1/17	08°30'N	149°52'W	80.0	04	20	81.0	76.4	1010	03	6	9	9	4	07	4
44	0230	1/18	08°10'N	149°37'W	80.4	07	22	81.2	76.5	1008	03	6	6	8	4	07	4
45	0530	1/18	07°50'N	149°22'W	80.0	07	13	80.0	76.2	1010	81	X	X	X	4	06	3
46	0830	1/18	07°30'N	149°06'W	79.3	10	13	74.7	72.0	1011	80	X	X	X	3	07	3
47	1130	1/18	07°10'N	148°50'W	79.0	14	30	77.2	77.0	1010	82	X	X	0	4	07	3
48	1430	1/18	06°50'N	148°37'W	80.0	10	15	77.0	74.2	1009	01	X	X	8	4	09	3
49	1730	1/18	06°30'N	148°20'W	79.2	12	12	78.7	75.3	1010	01	6	8	6	3	07	4
50	2030	1/18	06°10'N	148°06'W	78.8	08	12	79.0	75.5	1010	03	6	8	5	3	07	4
51	2330	1/18	05°48'N	147°50'W	78.7	11	11	80.1	76.2	1008	01	2,4,2	5	9	3	11	3
52	0230	1/19	05°28'N	147°36'W	79.7	XX	XX	80.5	76.1	1008	03	6,8,4	6	9	3	11	3
53	0530	1/19	05°08'N	147°22'W	80.0	15	07	80.0	76.2	1010	00	X	X	9	3	11	3
54	0830	1/19	04°46'N	147°07'W	80.0	12	08	79.0	75.2	1010	16	X	X	9	3	11	2
55	1130	1/19	04°25'N	146°52'W	79.7	15	13	79.3	75.2	1009	01	X	5	6	3	11	2
56	1430	1/19	04°04'N	146°38'W	77.7	15	14	78.9	73.3	1008	03	X	8	6	3	11	1
57	1740	1/19	03°42'N	146°22'W	78.3	15	15	79.1	71.6	1010	02	1,6,4	5	9	2	11	1
58	2030	1/19	03°25'N	146°11'W	78.1	13	15	79.8	71.7	1011	03	6	7	9	2	11	1
59	2330	1/19	03°04'N	145°58'W	78.5	14	15	79.3	72.2	1010	02	6	7	9	2	11	1
60	0230	1/20	02°44'N	145°47'W	78.5	13	14	78.5	72.2	1008	02	4,6	5	9	2	11	1
61	0530	1/20	02°23'N	145°34'W	78.3	15	12	78.1	72.0	1010	01	X	4	7	3	11	1
62	0830	1/20	02°02'N	145°26'W	77.8	12	12	77.8	71.9	1012	00	X	3	7	3	11	1
63	1130	1/20	01°42'N	145°15'W	76.7	09	10	76.9	71.3	1010	00	8	1	X	3	11	1
64	1430	1/20	01°21'N	145°04'W	76.4	09	10	76.3	71.2	1010	00	8	2	X	3	11	1
65	1730	1/20	01°00'N	144°54'W	76.3	11	12	77.5	72.5	1012	02	8	3	9	3	07	1
66	2030	1/20	00°39'N	144°43'W	76.0	12	12	77.5	71.7	1013	01	8	2	9	3	07	1
67	2330	1/20	00°18'N	144°30'W	76.7	12	12	78.7	72.5	1011	03	8	5	9	3	07	1
68	0230	1/21	00°04'S	144°15'W	77.2	12	15	77.5	72.0	1010	01	8	2	9	3	09	1
69	0530	1/21	00°25'S	144°00'W	76.4	10	15	77.1	72.7	1011	02	8	1	X	3	09	1
70	0830	1/21	00°48'S	143°48'W	76.5	11	13	77.1	73.0	1012	00	X	X	X	3	XX	1

Table 3.--Observations at bathythermograph lowerings, Charles H. Gilbert cruise 32 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell	
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.
71	1130	1/21	01°12'S	143°36'W	77.0	10	13	77.0	73.0	1011	00	X	X	X	3	09	2
72	1430	1/21	01°36'S	143°25'W	76.9	08	13	77.6	73.3	1011	00	X	X	X	3	09	2
73	1730	1/21	02°00'S	143°14'W	77.8	10	15	79.3	74.4	1013	03	8	4	9	3	10	1
74	2030	1/21	02°23'S	143°03'W	78.3	12	12	82.1	75.1	1013	03	8	6	8	3	10	1
75	2330	1/21	02°49'S	142°51'W	78.1	11	18	79.0	71.8	1010	01	8	4	9	3	09	3
76	0230	1/22	03°12'S	142°40'W	78.3	11	16	79.1	73.5	1010	01	8	2	9	3	09	3
77	0530	1/22	03°36'S	142°30'W	78.3	09	17	77.5	72.3	1012	00	X	X	X	3	09	3
78	0830	1/22	04°00'S	142°20'W	78.3	10	14	80.0	73.0	1012	00	X	X	X	3	09	3
79	1130	1/22	04°23'S	142°10'W	78.2	10	14	79.0	72.2	1010	00	X	X	X	3	09	3
80	1430	1/22	04°48'S	142°00'W	78.0	09	12	78.5	71.5	1010	00	X	4	X	3	09	5
81	1730	1/22	05°10'S	141°49'W	78.4	07	14	78.9	71.7	1012	01	8	2	9	3	08	3
82	2030	1/22	05°35'S	141°38'W	78.6	06	14	79.1	72.6	1012	02	8	2	9	3	08	3
83	2330	1/22	05°59'S	141°28'W	78.3	08	16	80.0	74.2	1010	02	6,8	9	7	3	10	3
84	0230	1/23	06°24'S	141°17'W	78.9	08	13	80.2	74.2	1010	01	6,8	4	9	3	10	3
85	0530	1/23	06°50'S	141°08'W	79.0	07	13	80.0	72.9	1012	03	X	6	8	3	09	4
86	0830	1/23	07°15'S	140°58'W	78.8	07	12	79.5	73.5	1012	02	X	5	8	3	09	4
87	1130	1/23	07°40'S	140°50'W	79.2	06	14	79.6	73.6	1010	00	8	2	X	3	07	3
88	1430	1/23	08°05'S	140°42'W	79.5	08	16	79.6	73.8	1010	03	8	3	X	3	09	3
89	1730	1/23	08°27'S	140°31'W	80.9	05	16	82.5	73.2	1013	02	8	3	9	4	07	3
90	1730	1/25	09°12'S	140°07'W	80.7	08	16	80.0	71.7	1015	01	8	3	8	3	08	3
91	2330	1/25	09°28'S	140°00'W	81.2	05	16	82.2	73.2	1012	03	8	6	9	3	07	3
92	1730	1/26	09°28'S	140°06'W	80.8	09	16	80.9	73.3	1013	01	8	3	9	2	07	2
93	2025	1/26	09°34'S	139°55'W	81.2	01	14	82.2	74.9	1012	01	8	4	8	3	07	1
94	2330	1/26	09°40'S	139°29'W	81.7	07	12	82.0	74.5	1010	02	8	4	9	3	07	2
95	1820	1/27	09°58'S	139°01'W	81.0	07	04	82.2	74.3	1013	03	8	8	8	1	07	1
96	1915	1/27	10°02'S	139°11'W	80.8	05	08	80.0	74.3	1013	25	8	8	7	1	07	1
97	2330	1/27	10°24'S	138°45'W	81.3	05	10	80.3	75.1	1013	03	8	8	7	3	06	2
98	0055	1/28	10°27'S	138°44'W	81.3	15	06	83.8	75.2	1010	02	8	7	8	3	06	2
99	1735	1/28	09°28'S	138°53'W	80.8	07	04	82.0	74.0	1013	02	8	3	8	2	07	2
100	2330	1/28	09°01'S	139°36'W	82.3	03	07	84.0	75.9	1010	02	9,8	4	8	2	09	2
101	1730	1/29	08°50'S	139°16'W	80.7	07	14	80.3	73.0	1012	02	8	3	8	3	07	3
102	2330	1/29	08°16'S	139°30'W	81.6	07	13	80.2	75.0	1010	02	8	4	8	4	07	4
103	1540	1/30	07°52'S	140°01'W	80.6	06	13	79.8	72.7	1012	01	8	3	8	3	07	4
104	1730	1/30	07°47'S	140°16'W	80.2	07	14	79.5	73.6	1013	02	8	4	8	3	07	4
105	1905	1/30	07°48'S	140°25'W	80.3	07	13	82.1	75.1	1012	02	8	3	8	3	07	4

Table 3.--Observations at bathythermograph lowerings, Charles H. Gilbert cruise 32 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell	
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.
106	2330	1/30	08°10'S	140°38'W	81.0	06	13	81.5	73.4	1009	02	8	2	8	3	07	4
107	1815	1/31	08°45'S	140°06'W	80.9	05	08	83.4	75.5	1012	02	8,9	6	8	3	06	1
108	1823	2/2	09°19'S	140°10'W	81.3	07	12	81.5	74.7	1011	02	8	5	8	3	06	2
109	2225	2/2	09°33'S	140°08'W	82.0	06	11	82.5	74.7	1009	02	8	3	8	2	10	1
110	1730	2/3	09°28'S	140°05'W	81.6	21	04	81.0	73.1	1010	01	8	2	8	2	15	1
111	2330	2/3	09°50'S	140°18'W	82.2	05	10	82.7	74.4	1008	03	8	3	8	3	03	1
112	1915	2/4	09°22'S	139°58'W	81.0	08	11	82.2	73.8	1010	02	8	3	8	4	08	4
113	1750	2/5	08°52'S	139°56'W	81.2	11	14	82.6	76.4	1012	03	6	8	8	3	09	3
114	0140	2/8	08°57'S	140°14'W	81.3	15	18	83.0	75.1	1006	02	6	8	8	2	09	3
115	1135	2/10	09°01'S	140°12'W	80.7	27	05	81.2	74.6	1008	02	8	1	X	3	XX	1
116	1730	2/10	09°38'S	140°55'W	81.8	09	07	84.5	75.5	1010	02	8	2	8	2	09	2
117	2330	2/10	10°13'S	141°37'W	82.0	04	06	83.1	75.2	1008	01	8	2	9	2	13	1
118	0530	2/11	10°44'S	142°15'W	81.8	03	06	83.0	75.0	1010	02	8	2	9	2	13	1
119	1130	2/11	11°16'S	142°52'W	80.9	07	09	81.2	73.8	1008	02	X	4	9	2	XX	1
120	1730	2/11	11°48'S	143°32'W	82.5	07	06	84.5	75.0	1011	02	8	3	9	1	13	1
121	2330	2/11	12°21'S	144°11'W	84.3	11	03	84.9	74.8	1009	02	8	5	9	1	11	2
122	0530	2/12	12°57'S	144°50'W	84.2	10	06	84.5	74.5	1010	01	8	1	9	1	13	2
123	1130	2/12	13°33'S	145°28'W	82.8	15	06	83.8	74.5	1008	02	8	1	9	1	11	2
124	1730	2/12	14°08'S	146°04'W	83.5	04	07	84.2	74.5	1010	02	8	1	9	1	11	2
125	2155	2/12	14°38'S	146°08'W	83.9	02	13	84.0	76.0	1009	02	8	1	9	1	09	1
126	2250	2/12	14°41'S	146°06'W	84.5	02	12	84.5	75.2	1009	02	8	1	9	1	09	1
127	0020	2/13	14°40'S	146°25'W	84.8	02	09	85.0	75.5	1008	01	8	2	9	2	09	1
128	0530	2/13	14°54'S	146°36'W	82.5	00	06	82.0	75.0	1010	02	8	2	9	2	00	1
129	1730	2/13	15°40'S	146°32'W	83.0	13	03	82.5	74.0	1011	02	8	1	9	1	00	1
130	2015	2/13	15°54'S	146°22'W	83.5	07	04	84.0	75.0	1011	01	8	1	9	1	10	2
131	2340	2/13	16°06'S	146°50'W	86.4	23	01	85.7	76.3	1010	15	1,8,9	5	9	0	20	5
132	0530	2/14	16°27'S	147°48'W	83.7	06	04	83.0	75.5	1011	15	1,8,9	4	9	0	18	5
133	1130	2/14	16°57'S	148°39'W	83.3	19	11	82.2	76.0	1009	15	1,4,9	6	9	1	14	1
134	0530	2/20	14°57'S	146°20'W	84.0	07	09	84.3	76.5	1011	00	X	X	9	1	14	1
135	1335	2/20	14°18'S	145°32'W	83.5	07	08	83.5	76.1	1010	00	9	6	9	2	XX	1
136	0530	2/21	12°48'S	143°55'W	83.8	05	06	80.0	80.0	1011	00	X	X	9	2	XX	1
137	1340	2/21	12°05'S	143°06'W	82.0	07	11	81.2	74.1	1011	15	X	6	8	2	XX	1
138	0530	2/22	10°39'S	141°33'W	82.2	10	11	83.0	75.0	1013	00	X	X	8	2	10	2
139	1340	2/22	09°56'S	141°03'W	82.2	10	12	81.1	75.8	1010	02	X	2	8	2	XX	1
140	1817	2/23	09°16'S	140°07'W	81.6	12	12	81.9	75.1	1014	02	8	6	8	3	12	2

Table 3.--Observations at bathythermograph lowerings, Charles H. Gilbert cruise 32 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell	
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.
141	2335	2/23	09°27'S	139°59'W	82.1	06	12	82.2	74.2	1012	01	8	2	8	3	08	1
142	1750	2/24	09°32'S	139°54'W	81.8	06	06	82.3	75.0	1015	01	8	2	8	2	06	1
143	2340	2/24	09°48'S	139°23'W	83.1	07	05	82.0	75.1	1012	03	8	6	9	2	07	1
144	0150	2/25	09°50'S	139°14'W	83.5	03	03	82.7	75.9	1012	02	8	5	8	1	03	2
145	2335	2/25	10°13'S	138°54'W	84.4	06	07	82.7	74.9	1011	03	6,8	4	9	1	06	1
146	0140	2/26	10°18'S	138°45'W	83.7	07	11	82.0	75.8	1011	02	8	4	9	1	07	2
147	1730	2/26	10°21'S	138°38'W	82.0	06	05	83.2	74.8	1014	02	8	1	9	1	18	2
148	0005	2/27	09°40'S	138°46'W	84.6	33	04	83.0	75.1	1010	02	8	1	8	1	10	2
149	0140	2/27	09°41'S	138°54'W	84.6	00	04	83.2	75.0	1010	02	8	1	8	1	10	2
150	0530	2/28	09°22'S	139°37'W	82.8	06	07	83.5	74.5	1012	00	X	X	X	1	XX	X
151	2330	2/28	08°24'S	140°34'W	83.5	06	08	83.3	76.1	1010	03	8	5	8	1	05	2
152	1830	3/1	07°50'S	140°28'W	81.8	12	10	83.0	75.8	1013	01	8	3	8	2	35	2
153	2115	3/1	07°57'S	140°18'W	82.3	07	10	81.5	76.0	1012	02	8	3	8	2	35	4
154	0645	3/3	08°57'S	139°57'W	82.5	00	15	83.0	75.5	1012	02	X	X	8	2	00	2
155	1730	3/3	08°47'S	139°58'W	81.5	00	11	82.0	75.0	1013	03	3,8	8	8	3	00	2
156	0005	3/4	09°00'S	140°08'W	82.3	31	07	84.5	74.5	1010	03	2,8	10	8	3	31	2
157	1833	3/4	09°00'S	140°06'W	82.7	09	04	83.3	75.0	1012	01	8	3	8	1	09	2
158	2200	3/4	08°58'S	140°21'W	83.1	01	11	82.9	75.3	1010	02	8	1	8	2	01	1
159	2350	3/4	08°49'S	140°29'W	83.1	05	08	82.8	75.0	1010	02	8	2	8	2	04	1
160	1615	3/5	08°47'S	140°14'W	82.2	08	14	81.7	75.4	1010	02	8	2	8	2	08	2
161	1755	3/5	08°46'S	140°15'W	82.1	05	12	82.0	76.0	1011	03	8	6	8	3	08	1
162	2330	3/5	08°46'S	140°22'W	82.6	06	15	82.5	75.0	1009	02	8	5	8	3	06	2
163	0105	3/6	08°52'S	140°20'W	82.0	03	16	83.0	75.0	1008	02	8	5	8	3	06	2
164	1740	3/6	09°11'S	139°52'W	82.5	10	14	82.6	75.5	1012	02	1,8	4	8	3	09	1
165	2240	3/6	09°34'S	139°30'W	83.1	07	11	83.3	75.4	1011	02	1,8	3	8	3	07	2
166	0015	3/7	09°36'S	139°27'W	82.7	08	16	82.9	75.9	1010	02	1,8	3	8	3	07	2
167	1800	3/7	09°48'S	139°11'W	83.0	04	04	83.0	76.0	1015	02	8	3	8	1	06	2
168	2340	3/7	09°16'S	139°45'W	83.9	05	11	84.7	77.3	1010	01	8	2	8	2	04	1
169	1740	3/8	09°01'S	140°09'W	83.0	09	12	82.8	77.2	1012	15	9	6	8	2	12	1
170	2300	3/8	09°06'S	140°19'W	83.8	11	10	84.8	78.0	1010	02	1,8	7	8	2	11	1
171	0110	3/9	09°08'S	140°12'W	83.0	07	10	83.8	76.3	1010	02	1,8	7	8	1	10	1
172	2125	3/9	09°02'S	140°10'W	83.1	09	12	83.3	76.5	1011	02	2,8	3	8	2	09	2
173	2335	3/12	08°41'S	140°22'W	83.3	07	11	83.3	76.3	1010	02	8	1	8	3	07	1
174	0235	3/13	08°18'S	140°34'W	82.4	07	10	82.7	76.6	1010	02	8	1	8	2	07	1
175	0530	3/13	07°56'S	140°46'W	81.5	09	12	83.8	77.0	1014	02	8	1	8	2	09	2

Table 3.--Observations at bathythermograph lowerings, Charles H. Gilbert cruise 32 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell	
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.
176	0830	3/13	07°32'S	140°58' W	81.5	09	11	84.0	77.8	1012	02	8	3	8	2	09	2
177	1130	3/13	07°09'S	141°11' W	81.5	09	11	81.5	76.1	1010	02	8	1	8	2	05	1
178	1430	3/13	06°46'S	141°23' W	81.1	09	10	81.5	76.0	1010	00	8	1	8	2	XX	1
179	1730	3/13	06°22'S	141°35' W	81.2	10	12	83.6	76.8	1012	02	8	2	8	2	10	2
180	2043	3/13	05°58'S	141°48' W	81.6	10	10	83.0	77.0	1011	02	8	3	8	2	10	2
181	2330	3/13	05°36'S	141°59' W	82.2	09	11	82.8	77.2	1008	03	8	5	8	2	09	1
182	0230	3/14	05°13'S	142°12' W	81.5	09	09	81.7	76.8	1008	01	8	3	8	2	09	2
183	0530	3/14	04°51'S	142°24' W	80.8	13	10	83.0	77.3	1013	02	8	3	8	2	09	2
184	0830	3/14	04°27'S	142°37' W	80.8	13	09	83.5	77.0	1012	02	8	4	8	2	13	2
185	1130	3/14	04°04'S	142°51' W	80.9	12	09	81.0	76.2	1010	01	8	1	X	2	12	2
186	1430	3/14	03°41'S	143°04' W	80.6	09	07	81.0	76.4	1010	00	8	1	X	2	XX	2
187	1730	3/14	03°18'S	143°16' W	81.1	09	08	82.0	76.8	1012	02	8	5	8	2	11	2
188	2030	3/14	02°56'S	143°28' W	81.0	07	10	82.8	77.0	1012	02	8	5	8	2	09	2
189	2332	3/14	02°35'S	143°40' W	81.7	05	10	82.2	76.6	1008	02	8	6	8	2	05	1
190	0230	3/15	02°14'S	143°53' W	81.1	06	07	81.3	75.8	1008	02	8	4	8	2	03	1
191	0530	3/15	01°52'S	144°06' W	80.5	07	10	82.3	76.0	1010	02	8	2	8	2	09	2
192	0830	3/15	01°30'S	144°19' W	80.0	11	09	82.6	76.6	1011	02	8	3	8	2	10	2
193	1130	3/15	01°08'S	144°31' W	79.1	07	07	79.3	75.0	1010	00	8	3	9	2	XX	2
194	1430	3/15	00°47'S	144°43' W	79.0	08	06	79.0	74.5	1010	01	8	1	9	1	XX	2
195	1745	3/15	00°25'S	144°56' W	79.5	08	08	82.3	76.0	1012	02	8	2	9	1	02	3
196	2030	3/15	00°04'S	145°08' W	81.2	09	04	82.5	75.5	1012	02	8	2	9	1	06	3
197	2330	3/15	00°20'N	145°20' W	83.5	09	05	82.0	75.0	1009	01	8	4	9	1	03	3
198	0230	3/16	00°44'N	145°34' W	83.5	00	00	82.7	75.0	1009	15	8	3	9	0	00	3
199	0530	3/16	01°08'N	145°46' W	81.6	00	00	82.0	74.8	1011	15	8	3	9	0	06	3
200	0830	3/16	01°33'N	145°59' W	80.9	01	04	82.0	75.0	1012	02	8	3	9	0	03	2
201	1130	3/16	01°57'N	146°12' W	81.1	00	00	81.0	74.3	1010	02	8	1	9	0	03	2
202	1430	3/16	02°22'N	146°25' W	80.8	25	06	80.4	75.4	1010	02	8	1	9	1	01	2
203	1730	3/16	02°46'N	146°38' W	80.0	28	06	81.8	75.6	1013	15	8	3	9	1	00	2
204	2030	3/16	03°11'N	146°52' W	81.9	25	03	83.5	76.3	1014	15	8,9	2	9	1	01	2
205	2335	3/16	03°36'N	147°03' W	84.7	33	02	83.0	75.9	1011	15	4,8	4	9	1	01	3
206	0230	3/17	03°59'N	147°14' W	82.1	08	12	79.9	76.0	1011	03	4,8	7	8	3	00	1
207	0530	3/17	04°22'N	147°24' W	80.0	07	12	80.0	75.5	1013	03	4,8	7	8	3	03	1
208	0830	3/17	04°45'N	147°35' W	80.1	08	15	80.5	75.5	1014	03	6	9	8	3	03	2
209	1130	3/17	05°09'N	147°44' W	80.1	09	14	79.1	75.0	1012	01	4	7	X	3	03	3
210	1430	3/17	05°32'N	147°56' W	80.0	11	13	79.3	75.0	1011	01	8	1	X	3	07	3

Table 3.--Observations at bathythermograph lowerings, Charles H. Gilbert cruise 32 (coded according to H.O. Pub. 606-c, second edition, 1956) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell	
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.
211	1730	3/17	05°55'N	148°05'W	80.5	20	07	82.8	76.2	1013	02	8	2	8	3	06	3
212	2030	3/17	06°18'N	148°16'W	82.0	00	00	82.8	75.0	1013	02	6,8	1	9	2	05	3
213	2330	3/17	06°40'N	148°28'W	83.7	00	00	82.8	75.7	1010	01	1	1	9	2	05	3
214	0230	3/18	06°59'N	148°41'W	83.7	09	03	81.9	75.0	1010	01	8	2	9	2	05	3
215	0530	3/18	07°19'N	148°55'W	81.8	08	07	82.8	75.3	1012	01	6	2	9	2	05	3
216	0830	3/18	07°38'N	149°09'W	80.0	08	07	82.3	76.2	1013	03	6	8	8	2	03	3
217	1130	3/18	07°58'N	149°23'W	80.0	09	10	80.4	75.7	1010	15	8	7	8	2	04	3
218	1430	3/18	08°18'N	149°38'W	79.2	04	17	76.1	74.9	1010	60	0	9	X	3	XX	X
219	1730	3/18	08°38'N	149°52'W	78.0	04	18	78.0	74.8	1012	02	6	9	8	3	05	3
220	2030	3/18	08°57'N	150°06'W	78.8	05	18	79.8	75.3	1012	02	6	9	8	3	05	3
221	2330	3/18	09°17'N	150°19'W	79.1	06	16	79.2	74.8	1010	02	0,4,8	7	8	4	06	3
222	0310	3/19	09°43'N	150°35'W	78.9	06	13	78.5	73.9	1010	15	0,8,9	7	8	4	02	3
223	0530	3/19	10°00'N	150°45'W	78.1	07	17	79.0	74.5	1011	01	8	2	8	4	06	3
224	0830	3/19	10°20'N	150°58'W	78.0	03	15	74.0	74.0	1012	21	X	X	0	5	07	3
225	1130	3/19	10°42'N	151°11'W	78.0	05	17	75.9	72.7	1011	60	0	7	X	4	XX	3
226	1430	3/19	11°02'N	151°22'W	77.6	05	15	77.1	71.6	1010	01	8	1	9	4	05	3
227	1730	3/19	11°24'N	151°35'W	77.3	04	14	77.5	72.5	1013	01	8	2	9	4	05	3
228	2328	3/19	12°06'N	152°01'W	78.1	04	13	77.3	73.1	1012	15	8	7	8	4	03	3
229	0530	3/20	12°50'N	152°25'W	76.9	05	14	77.9	72.6	1013	01	8	3	8	3	03	3
230	1130	3/20	13°34'N	152°49'W	76.3	07	14	75.5	71.0	1013	00	9	6	X	3	04	3
231	1730	3/20	14°19'N	153°13'W	75.3	06	14	76.0	70.3	1014	15	6,8	6	8	3	04	2
232	2330	3/20	15°03'N	153°38'W	76.8	07	10	76.9	70.4	1013	02	8	5	9	2	04	1
233	0530	3/21	15°48'N	154°10'W	75.5	05	10	76.0	68.8	1014	01	0	0	9	2	04	1
234	1130	3/21	16°33'N	154°42'W	75.0	08	06	74.0	66.9	1015	02	8	1	9	2	04	1
235	1730	3/21	17°17'N	155°40'W	74.1	03	03	74.0	67.0	1016	02	8	1	9	2	04	1
236	2330	3/21	18°01'N	155°46'W	75.2	15	06	76.0	67.2	1014	02	8	1	9	2	09	2
237	0530	3/22	18°46'N	156°14'W	75.0	XX	00	74.3	65.2	1015	02	8	1	9	2	09	2
238	1130	3/22	19°30'N	156°42'W	74.6	27	05	73.3	67.2	1014	02	8	1	9	1	00	0
239	1730	3/22	20°14'N	157°10'W	73.8	00	13	73.3	66.2	1014	15	0,6	9	8	1	33	1
240	2330	3/22	20°52'N	157°44'W	74.0	32	06	72.0	63.5	1013	02	2,5,8	9	8	1	35	1

Table 4.--Observations at bathythermograph lowerings, John R. Manning cruise 34 (coded according to H. O. Pub. 606-c, first edition, 1951)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
1	1800	1/6	18°26'N	154°56'W	75.5	085	24	74.5	71.0	1018	02	8	3	8	4	-	-	-
2	0000	1/7	18°08'N	154°24'W	75.5	080	24	77.5	73.2	1016	03	0,8	8	8	4	-	-	34.65
3	0600	1/7	17°51'N	153°58'W	75.8	080	25	74.5	69.5	1017	01	8	5	8	4	-	-	-
4	1200	1/7	17°36'N	153°32'W	75.5	080	26	75.0	71.0	1017	XX	X	X	X	4	-	-	34.42
5	1750	1/7	17°21'N	153°05'W	76.0	085	24	70.4	65.0	1020	03	8	7	8	4	-	-	-
6	0000	1/8	17°08'N	152°39'W	76.0	045	24	74.6	69.5	1016	02	6,8	7	8	4	-	-	34.67
7	0600	1/8	16°52'N	152°07'W	75.9	050	23	73.0	68.5	1016	02	6,8	6	8	4	-	-	-
8	1200	1/8	16°28'N	151°38'W	75.0	060	22	72.0	66.6	1015	01	8	3	8	4	-	-	35.17
9	1800	1/8	16°03'N	151°08'W	75.2	060	24	73.0	67.5	1017	01	8	3	8	4	-	-	-
10	0000	1/9	15°47'N	150°37'W	75.3	060	23	76.2	69.1	1013	01	8	2	8	4	-	-	34.92
11	0600	1/9	15°28'N	150°05'W	75.7	060	25	73.2	67.8	1015	03	6	6	8	3	-	-	-
12	1200	1/9	15°10'N	149°32'W	76.0	060	26	74.0	68.0	1013	01	6	2	8	3	-	-	34.25
13	1800	1/9	14°52'N	148°58'W	76.4	050	20	73.3	68.5	1014	03	0,8	7	8	3	-	-	-
14	0000	1/10	14°35'N	148°25'W	76.3	055	18	75.6	69.0	1012	15	0,8	9	8	3	-	-	34.27
15	0600	1/10	14°18'N	147°50'W	76.5	050	19	74.0	68.5	1012	02	0,8	9	8	3	-	-	-
16	1200	1/10	14°02'N	147°16'W	76.4	080	19	73.5	70.0	1012	02	0,8	9	8	3	-	-	34.13
17	1800	1/10	13°46'N	146°42'W	77.0	090	15	72.9	69.0	1014	20	6	8	8	3	-	-	-
18	0000	1/11	13°28'N	146°10'W	76.9	090	11	75.1	70.6	1011	02	0,6	8	8	3	-	-	34.22
19	0600	1/11	13°09'N	145°38'W	76.5	125	16	75.5	67.5	1014	50	0,6	8	7	3	-	-	-
20	1200	1/11	12°49'N	145°05'W	76.2	125	14	75.8	71.1	1012	02	6	8	7	3	-	-	34.38
21	1800	1/11	12°30'N	144°34'W	76.2	045	29	72.1	69.2	1016	51	6	8	6	3	-	-	-
22	0000	1/12	12°10'N	144°01'W	76.3	055	22	73.0	68.7	1012	02	0,6	8	7	3	-	-	34.25
23	0600	1/12	11°47'N	143°23'W	76.3	055	19	75.5	70.5	1014	01	0,6	7	8	3	-	-	-
24	1200	1/12	11°26'N	142°47'W	76.3	010	09	74.1	70.0	1012	02	8	3	8	3	-	-	33.69
25	1800	1/12	11°03'N	142°09'W	76.2	020	17	76.0	70.5	1015	02	4,8	4	8	3	-	-	-
26	0000	1/13	10°39'N	141°32'W	77.0	030	17	75.3	70.9	1011	02	8	4	8	2	-	-	34.02
27	0600	1/13	10°13'N	140°58'W	76.4	060	14	76.3	71.3	1012	03	5,6	8	8	2	-	-	-
28	1200	1/13	09°48'N	140°24'W	76.2	060	10	75.0	71.5	1010	02	6,8	8	8	2	-	-	33.64
29	1800	1/13	09°28'N	139°48'W	76.3	030	15	75.5	72.2	1012	02	6,8	7	8	2	-	-	-
30	0000	1/14	08°58'N	139°11'W	77.5	040	17	76.9	73.1	1008	01	4,8	4	8	3	-	-	33.78
31	0600	1/14	08°36'N	138°32'W	77.2	040	14	77.3	73.9	1010	03	4,8	7	8	2	-	-	-
32	1200	1/14	08°14'N	137°51'W	79.0	060	16	77.3	74.8	1008	01	8	4	8	2	-	-	34.36
33	1800	1/14	07°48'N	137°05'W	79.7	060	16	80.0	73.5	1011	01	8	2	8	3	-	-	-
34	0000	1/15	07°20'N	136°23'W	81.0	060	15	81.2	74.9	1007	02	8	2	8	3	-	-	34.85
35	0600	1/15	06°50'N	135°45'W	79.9	050	12	80.0	74.2	1010	02	8	3	8	2	-	-	-

Table 4.--Observations at bathythermograph lowerings, John R. Manning cruise 34 (coded according to H.O. Pub. 606-c, first edition, 1951) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
36	1200	1/15	06°20'N	135°09'W	79.5	065	12	79.0	74.0	1008	02	8	2	8	2	-	-	34.92
37	1800	1/15	05°52'N	134°32'W	79.0	060	10	79.7	75.5	1010	02	4,8	4	8	2	-	-	-
38	0000	1/16	05°26'N	133°55'W	80.7	100	09	79.1	74.6	1007	01	4,8	4	8	2	-	-	34.79
39	0600	1/16	05°02'N	133°21'W	80.0	110	08	79.5	75.5	1010	03	4,8	6	8	2	-	-	-
40	1200	1/16	04°38'N	132°41'W	78.6	130	08	78.4	74.2	1004	02	4,8	6	8	2	-	-	34.96
41	1528	1/16	04°22'N	132°22'W	79.0	130	13	76.1	74.1	1010	25	6	7	7	2	-	-	-
42	2115	1/16	04°29'N	132°17'W	79.4	100	17	80.0	75.0	1010	03	4,8	5	8	3	-	-	35.01
43	0305	1/17	04°25'N	132°13'W	79.3	100	14	78.3	74.6	1009	03	4,8	8	8	3	-	-	-
44	0821	1/17	03°51'N	132°12'W	78.8	090	13	77.5	74.5	1011	02	4,8	7	8	2	-	-	34.88
45	1555	1/17	03°24'N	132°14'W	76.4	130	12	77.9	73.5	1009	01	8	7	7	2	-	-	-
46	2116	1/17	03°34'N	132°06'W	76.7	130	18	78.9	74.0	1010	02	4,5	5	8	3	-	-	34.85
47	0138	1/18	03°28'N	132°09'W	76.7	130	10	77.0	73.6	1009	02	5	4	8	2	-	-	-
48	1200	1/18	02°22'N	132°14'W	75.7	150	09	75.3	71.5	1009	01	0	1	8	2	-	-	34.74
49	1550	1/19	01°35'N	132°05'W	76.0	120	09	77.9	72.0	1010	01	6,8	2	8	2	-	-	-
50	2117	1/19	01°34'N	132°09'W	76.8	130	11	78.8	73.8	1010	01	8	1	8	2	-	-	34.67
51	0047	1/20	01°22'N	132°10'W	76.9	130	15	77.6	72.5	1008	03	4,8	6	8	2	-	-	-
52	0759	1/20	00°36'N	132°10'W	76.1	130	10	76.4	72.5	1012	02	6	6	8	2	-	-	34.65
53	1549	1/20	00°01'S	132°14'W	75.8	120	14	77.1	72.2	1012	01	4	2	8	2	-	-	-
54	2109	1/20	00°07'S	132°19'W	76.4	120	14	77.6	72.0	1011	03	5	6	8	2	-	-	34.74
55	0055	1/21	00°17'S	132°19'W	76.5	120	13	76.5	72.5	1009	01	5,8	1	8	2	-	-	-
56	0800	1/21	01°11'S	132°06'W	76.0	130	11	76.8	72.0	1012	02	8	1	8	2	-	-	34.87
57	1555	1/21	01°53'S	132°04'W	75.5	100	09	76.1	72.0	1012	02	4,8	2	8	2	-	-	-
58	2126	1/21	01°54'S	132°07'W	75.3	100	08	75.9	73.0	1012	03	4,8	5	8	2	-	-	34.88
59	0124	1/22	02°00'S	131°59'W	76.7	100	12	76.9	72.0	1010	02	4,8	2	8	2	-	-	-
60	0758	1/22	02°47'S	131°56'W	77.3	100	14	76.7	71.6	1012	02	8	2	8	2	-	-	35.34
61	1557	1/22	03°30'S	132°06'W	77.5	060	13	77.1	70.9	1012	02	8	3	8	2	-	-	-
62	2113	1/22	03°30'S	132°04'W	77.9	060	12	79.7	72.6	1012	02	8	1	8	2	-	-	35.23
63	0155	1/22	03°24'S	132°02'W	78.2	060	11	77.9	72.0	1010	03	8	3	8	2	-	-	-
64	0800	1/23	04°06'S	132°00'W	77.5	070	17	75.5	72.1	1012	00	0	0	8	2	-	-	35.25
65	1558	1/23	04°50'S	132°10'W	77.5	100	10	78.0	72.3	1013	03	8	3	8	2	-	-	-
66	2113	1/23	04°46'S	132°10'W	78.1	090	14	79.8	72.9	1012	01	8	1	8	2	-	-	35.28
67	0044	1/24	04°46'S	132°05'W	78.2	090	17	79.0	73.2	1010	03	8	3	8	2	-	-	-
68	0751	1/24	05°39'S	132°02'W	78.0	080	20	77.5	72.3	1013	01	8	1	8	2	-	-	35.34
69	1555	1/24	06°23'S	132°10'W	78.1	100	15	78.5	73.8	1014	03	8	5	8	2	-	-	-
70	2112	1/24	06°22'S	132°16'W	78.0	100	14	80.0	74.2	1012	02	8	4	8	2	-	-	35.35

Table 4.--Observations at bathythermograph lowerings, John R. Manning cruise 34 (coded according to H.O. Pub. 606-c, first edition, 1951) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
71	0117	1/25	06°24'S	132°06'W	78.5	100	14	80.6	74.0	1010	02	8	3	8	2	-	-	-
72	0800	1/25	07°11'S	131°58'W	78.2	080	17	78.5	73.3	1014	00	0	0	8	2	-	-	35.30
73	1554	1/25	07°50'S	132°01'W	79.0	100	16	80.0	73.0	1014	03	8	3	8	3	-	-	-
74	2119	1/25	07°50'S	132°02'W	79.4	100	18	79.9	74.0	1013	03	8	2	8	3	-	-	35.48
75	0103	1/26	07°56'S	131°54'W	79.1	100	17	79.9	74.0	1011	03	8	3	8	3	-	-	-
76	0800	1/26	08°46'S	131°53'W	79.5	090	16	79.0	74.0	1013	01	8	1	8	3	-	-	35.53
77	1555	1/26	09°32'S	132°02'W	80.1	060	10	80.0	73.5	1014	03	8	4	8	2	-	-	-
78	2104	1/26	09°38'S	132°03'W	80.8	060	10	82.1	75.6	1012	02	8	4	8	2	-	-	35.64
79	0048	1/27	09°40'S	131°52'W	80.6	060	09	79.6	73.5	1010	02	8	2	8	2	-	-	-
80	0700	1/27	10°20'S	131°52'W	80.2	090	10	80.1	73.4	1012	01	8	1	8	2	-	-	35.79
81	1556	1/27	10°58'S	132°02'W	80.7	090	09	80.7	74.2	1012	03	8,5	2	8	2	-	-	-
82	2105	1/27	10°58'S	132°04'W	81.2	070	11	82.0	77.1	1012	03	8,4	3	8	2	-	-	35.93
83	0116	1/28	11°04'S	131°55'W	81.3	060	08	81.0	75.0	1010	03	8	5	8	2	-	-	-
84	0700	1/28	11°46'S	131°56'W	81.0	090	10	79.7	73.2	1014	01	8	2	8	2	-	-	35.93
85	1557	1/28	12°32'S	132°02'W	81.3	060	11	79.8	75.0	1014	03	8	6	8	2	-	-	-
86	2101	1/28	12°30'S	132°07'W	81.9	060	15	81.0	74.5	1014	02	8	3	8	2	-	-	35.93
87	0052	1/29	12°29'S	131°55'W	82.2	060	10	81.1	74.0	1011	01	5,8	3	8	2	-	-	-
88	0700	1/29	13°15'S	131°54'W	81.7	110	07	81.4	74.5	1014	01	8	1	8	2	-	-	35.82
89	1556	1/29	14°04'S	132°02'W	81.7	090	08	82.2	76.4	1013	03	8,5	3	8	2	-	-	-
90	2105	1/29	14°02'S	132°03'W	82.4	090	11	83.5	77.2	1012	03	5,8	6	8	2	-	-	35.97
91	0046	1/30	14°07'S	131°55'W	82.2	090	09	83.3	77.6	1010	02	8	6	8	2	-	-	-
92	0600	1/30	13°54'S	132°23'W	82.0	090	10	82.0	78.0	1014	13	5,8	4	8	2	-	-	-
93	1203	1/30	13°32'S	133°06'W	81.5	080	11	81.6	78.9	1010	13	6,8	4	8	1	-	-	35.86
94	1800	1/30	13°08'S	133°54'W	82.1	070	12	84.0	77.5	1013	03	5,8	6	8	2	-	-	-
95	0001	1/31	12°49'S	134°35'W	83.0	060	10	86.5	78.8	1010	03	5,8	7	8	2	-	-	36.15
96	0600	1/31	12°28'S	135°20'W	81.6	020	10	79.0	71.0	1012	13	5,8	8	7	2	-	-	-
97	1200	1/31	12°07'S	136°06'W	81.6	060	14	79.6	75.1	1010	01	5,8	5	7	2	-	-	35.95
98	1800	1/31	11°47'S	136°48'W	81.6	040	12	82.0	77.4	1013	15	5,8	8	8	2	-	-	-
99	0000	2/1	11°22'S	137°33'W	81.7	060	16	81.8	75.7	1010	03	5,8	5	8	2	-	-	35.88
100	0500	2/1	10°57'S	138°04'W	81.4	080	11	81.6	75.0	1011	01	8	1	8	2	-	-	-
101	1653	2/1	10°47'S	138°38'W	81.3	070	13	81.9	75.0	1012	01	8	2	8	2	-	-	-
102	2204	2/1	10°47'S	138°38'W	81.8	060	07	82.0	75.0	1010	02	8	2	8	2	-	-	35.86
103	0145	2/2	10°50'S	138°30'W	81.8	080	08	81.4	76.1	1009	02	8	3	8	2	-	-	-
104	0700	2/2	10°14'S	138°33'W	81.2	080	07	81.5	76.6	1010	02	8	3	8	2	-	-	35.86
105	1656	2/2	09°32'S	138°37'W	81.5	070	09	82.2	75.2	1010	02	8	2	8	1	-	-	-

Table 4.--Observations at bathythermograph lowerings, John R. Manning cruise 34 (coded according to H.O. Pub. 606-c, first edition, 1951) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
106	2210	2/2	09°31'S	138°39'W	82.5	060	07	82.1	75.4	1010	03	8	4	8	1	-	-	35.90
107	0159	2/3	09°35'S	138°28'W	82.2	060	08	82.0	75.3	1008	01	8,5	2	8	1	-	-	-
108	0600	2/3	09°06'S	138°26'W	81.0	060	14	80.5	74.5	1010	02	0	0	8	1	-	-	35.88
109	1653	2/3	08°34'S	138°34'W	80.9	050	10	82.1	76.4	1010	02	8,4	2	8	2	-	-	-
110	2205	2/3	08°34'S	138°34'W	80.4	050	13	82.3	75.1	1009	03	8,4,5	6	8	2	-	-	35.88
111	0142	2/4	08°34'S	138°27'W	81.4	070	10	81.9	75.6	1007	02	8,4	6	8	2	-	-	-
112	0600	2/4	08°03'S	138°24'W	80.4	090	13	80.5	74.9	1009	01	4,8	3	8	2	-	-	35.79
113	1708	2/4	07°33'S	138°38'W	80.2	090	14	81.2	75.0	1010	03	4,8	6	8	2	-	-	-
114	2208	2/4	07°35'S	138°38'W	80.4	080	13	80.5	75.0	1009	03	4,8	6	8	2	-	-	35.70
115	0148	2/5	07°41'S	138°30'W	80.5	080	14	81.0	76.0	1008	02	4,8	6	8	3	-	-	-
116	0500	2/5	07°36'S	138°54'W	80.2	080	14	80.5	75.5	1010	01	4,8	2	8	3	-	-	35.73
117	1658	2/5	07°30'S	139°34'W	80.7	090	18	80.7	76.1	1011	03	8	3	8	3	-	-	-
118	2202	2/5	07°31'S	139°36'W	81.0	090	19	82.2	76.0	1008	02	8	6	8	3	-	-	35.81
119	0144	2/6	07°36'S	139°25'W	81.1	090	16	81.2	77.2	1008	02	8	6	8	3	-	-	-
120	0600	2/6	08°06'S	139°22'W	80.6	090	19	80.3	76.0	1010	01	8	2	8	4	-	-	35.86
121	1655	2/6	08°28'S	139°36'W	80.8	090	18	81.1	76.2	1010	02	8	2	8	3	-	-	-
122	2203	2/6	08°26'S	139°39'W	81.2	090	17	82.5	76.7	1008	03	7	5	8	3	-	-	35.86
123	0145	2/7	08°32'S	139°28'W	81.3	090	16	81.3	77.0	1007	02	4,8	5	8	3	-	-	-
124	0554	2/7	09°01'S	139°24'W	81.2	090	13	81.0	77.0	1008	01	8	3	8	3	-	-	35.88
125	1654	2/7	09°32'S	139°38'W	81.4	060	15	81.9	76.1	1009	14	8	5	8	2	-	-	-
126	2206	2/7	09°30'S	139°38'W	81.7	070	14	83.5	77.8	1008	01	8	3	8	2	-	-	35.86
127	0235	2/8	09°30'S	139°32'W	81.6	070	17	81.5	76.9	1007	02	8	2	8	2	-	-	-
128	0700	2/8	10°01'S	139°28'W	81.3	100	14	81.3	76.1	1009	01	8	2	8	2	-	-	35.81
129	1651	2/8	10°23'S	139°38'W	81.5	070	13	81.4	76.0	1010	02	8	2	8	2	-	-	-
130	2205	2/8	10°22'S	139°40'W	81.8	070	14	84.1	76.5	1008	02	8	2	8	2	-	-	35.84
131	0227	2/9	10°27'S	139°30'W	81.8	080	10	80.6	76.1	1007	01	8	1	8	2	-	-	-
132	0725	2/9	09°56'S	139°58'W	81.8	090	12	81.6	77.4	1009	03	8	4	8	2	-	-	35.79
133	1653	2/9	09°18'S	140°33'W	81.4	080	14	82.5	76.1	1008	01	8	2	8	2	-	-	-
134	2209	2/9	09°14'S	140°34'W	81.7	070	12	82.9	76.8	1007	03	6,8	6	8	2	-	-	35.79
135	0215	2/10	09°20'S	140°28'W	81.6	070	12	X	X	1006	02	6,8	4	8	2	-	-	-
136	1648	2/10	08°26'S	140°36'W	81.0	080	14	81.2	75.5	1010	03	8	4	8	2	-	-	-
137	2207	2/10	08°24'S	140°38'W	81.4	080	14	82.5	75.3	1008	01	8	2	8	2	-	-	35.81
138	0205	2/11	08°30'S	140°31'W	81.4	080	13	80.4	74.3	1007	02	8	3	8	2	-	-	-
139	0608	2/11	08°55'S	140°46'W	81.4	120	02	81.2	75.1	1010	03	8,5	4	8	2	-	-	35.79
140	1159	2/11	09°30'S	141°22'W	81.4	100	08	80.6	74.7	1008	01	8	1	8	2	-	-	-

Table 4.--Observations at bathythermograph lowerings, John R. Manning cruise 34 (coded according to H.O. Pub. 606-c, first edition, 1951) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
141	1800	2/11	10°05'S	141°59' W	81.9	100	14	81.5	75.1	1011	15	8,7	6	8	2	-	-	35.90
142	0000	2/12	10°38'S	142°35' W	83.2	030	07	83.0	75.3	1008	01	8	2	8	1	-	-	-
143	0556	2/12	11°12'S	143°14' W	82.7	175	05	79.5	72.5	1010	03	4,8	4	8	1	-	-	35.95
144	1200	2/12	11°44'S	143°52' W	82.3	090	13	81.5	73.5	1008	01	8	2	8	2	-	-	-
145	1757	2/12	12°19'S	144°28' W	83.0	070	11	83.0	74.3	1010	02	8	2	8	2	-	-	35.88
146	0000	2/13	12°57'S	145°03' W	84.1	040	10	84.0	76.0	1008	02	8	2	8	2	-	-	-
147	0558	2/13	13°38'S	145°38' W	83.5	020	06	83.1	74.6	1010	03	8	6	8	1	-	-	36.08
148	1159	2/13	14°13'S	146°16' W	83.0	160	06	81.3	74.6	1010	01	8,6	2	8	1	-	-	-
149	1757	2/13	14°56'S	146°48' W	83.4	090	07	83.6	75.2	1011	02	8	1	8	1	-	-	36.35
150	0002	2/14	15°32'S	147°21' W	87.4	180	04	83.2	75.5	1009	03	8	6	8	0	-	-	-
151	0556	2/14	16°03'S	148°04' W	85.0	180	04	82.0	75.0	1010	01	4,8	3	8	0	-	-	36.24
152	1200	2/14	16°44'S	148°38' W	83.1	080	12	81.4	76.1	1008	03	6,8	7	8	2	-	-	-
153	1703	2/19	16°34'S	150°04' W	83.5	100	09	83.5	77.5	1012	03	6,8	5	8	2	-	-	-
154	2211	2/19	16°34'S	150°06' W	83.9	070	08	84.0	77.0	1011	02	6,8	5	8	2	-	-	36.22
155	0152	2/20	16°39'S	149°57' W	84.3	060	05	83.1	77.2	1009	15	6,8,9	6	8	2	-	-	-
156	0902	2/20	15°48'S	149°48' W	83.5	040	10	83.2	78.0	1012	15	8	2	8	2	-	-	36.27
157	1653	2/20	15°04'S	149°51' W	83.5	040	10	84.3	77.6	1011	01	5,8	3	8	2	-	-	-
158	2207	2/20	15°05'S	149°52' W	84.7	040	08	84.0	76.4	1011	14	8,4	5	8	2	-	-	36.02
159	0141	2/21	15°04'S	149°42' W	84.2	040	05	83.6	77.9	1009	14	8,6	6	8	2	-	-	-
160	0900	2/21	14°11'S	149°32' W	83.5	050	04	81.0	76.5	1011	01	8	2	8	2	-	-	36.06
161	1658	2/21	13°22'S	149°37' W	83.3	140	05	80.7	77.9	1012	15	8,9	7	8	2	-	-	-
162	2159	2/21	13°24'S	149°37' W	83.7	040	07	81.0	76.5	1012	01	8,6	5	8	2	-	-	36.13
163	0135	2/22	13°26'S	149°28' W	84.5	040	10	85.5	76.0	1010	02	6,8	3	8	2	-	-	-
164	0916	2/22	12°31'S	149°15' W	82.9	070	16	82.8	76.0	1012	01	8	1	8	2	-	-	36.08
165	1655	2/22	12°02'S	149°20' W	83.1	070	14	83.2	77.6	1012	02	4,8	6	8	2	-	-	-
166	2201	2/22	12°06'S	149°18' W	83.4	070	16	83.4	77.0	1012	03	8	5	8	3	-	-	36.06
167	0142	2/23	12°08'S	149°12' W	83.4	090	15	86.0	78.0	1010	01	8	2	8	3	-	-	-
168	0900	2/23	11°24'S	149°00' W	82.7	100	18	80.5	77.8	1012	02	8	2	8	3	-	-	35.90
169	1656	2/23	10°31'S	148°57' W	82.8	100	14	83.8	77.8	1012	03	8	2	8	3	-	-	-
170	2208	2/23	10°36'S	148°57' W	83.0	090	07	83.3	77.0	1012	14	8,9	4	8	3	-	-	35.93
171	0203	2/24	10°46'S	148°50' W	83.3	090	16	84.5	77.5	1010	03	8,5	3	8	3	-	-	-
172	0858	2/24	09°52'S	148°40' W	82.6	090	17	81.2	75.0	1012	01	8	2	8	3	-	-	35.93
173	1655	2/24	09°08'S	148°42' W	81.7	090	12	82.6	77.0	1014	03	8	5	8	2	-	-	-
174	2204	2/24	09°06'S	148°40' W	82.2	090	12	83.0	76.0	1013	02	8	2	8	3	-	-	35.79
175	0135	2/25	09°07'S	148°32' W	82.8	090	14	82.8	77.0	1011	03	8	3	8	3	-	-	-

Table 4.--Observations at bathythermograph lowerings, John R. Manning cruise 34 (coded according to H.O. Pub. 606-c, first edition, 1951) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
176	0858	2/25	08°12'S	148°23' W	81.9	110	18	81.4	76.5	1012	01	8	2	8	3	-	-	35.82
177	1655	2/25	07°18'S	148°29' W	81.0	060	11	80.5	75.5	1012	03	4,8	4	8	2	-	-	-
178	2200	2/25	07°18'S	148°29' W	81.2	080	12	83.2	75.7	1012	02	8,4	3	8	3	-	-	35.71
179	0154	2/26	07°24'S	148°22' W	81.9	070	09	83.5	75.5	1010	01	8	1	8	2	-	-	-
180	0801	2/26	06°41'S	148°16' W	80.9	070	11	81.0	75.3	1012	02	8	1	8	2	-	-	35.64
181	1658	2/26	05°53'S	148°20' W	80.4	100	08	80.3	75.9	1012	03	8,4	3	8	2	-	-	-
182	2205	2/26	05°52'S	148°22' W	81.5	060	09	82.0	74.3	1012	02	6,8	5	8	2	-	-	35.62
183	0143	2/27	05°59'S	148°13' W	81.3	070	08	81.2	74.5	1010	01	8	3	8	2	-	-	-
184	0902	2/27	05°10'S	148°04' W	80.1	080	08	78.9	74.0	1013	02	8	1	8	2	-	-	35.59
185	1654	2/27	04°16'S	148°02' W	79.8	090	10	80.0	74.0	1012	02	8	2	8	2	-	-	-
186	2215	2/27	04°18'S	148°02' W	80.2	090	09	79.3	74.2	1011	02	8	2	8	2	-	-	35.48
187	0127	2/28	04°26'S	147°57' W	80.9	080	11	80.5	74.0	1009	02	8	2	8	2	-	-	-
188	0811	2/28	03°34'S	148°01' W	79.6	080	10	79.0	74.0	1012	02	8	2	8	2	-	-	35.41
189	1657	2/28	02°49'S	148°14' W	79.6	100	08	79.5	74.3	1012	03	8	5	8	2	-	-	-
190	2203	2/28	02°52'S	148°16' W	80.2	120	14	80.0	75.5	1011	02	8,5	3	8	2	-	-	35.43
191	0141	3/1	03°01'S	148°09' W	80.5	090	09	80.1	75.3	1009	01	8	3	8	2	-	-	-
192	0754	3/1	02°14'S	148°00' W	79.6	120	10	80.0	75.3	1012	02	8	3	8	2	-	-	35.41
193	1656	3/1	01°27'S	147°54' W	79.5	080	10	79.5	75.0	1012	02	4,8	2	8	2	-	-	-
194	2202	3/1	01°26'S	147°54' W	79.9	080	07	80.4	74.9	1011	02	4,8	2	8	2	-	-	35.39
195	0130	3/2	01°31'S	147°45' W	80.4	070	08	80.1	74.7	1009	03	8	4	8	2	-	-	-
196	0756	3/2	00°45'S	147°46' W	79.3	080	09	78.8	74.5	1013	02	8	2	8	2	-	-	35.14
197	1655	3/2	00°08'N	147°58' W	79.0	090	07	79.6	75.1	1013	02	8	4	8	1	-	-	-
198	2206	3/2	00°06'N	147°58'W	79.9	080	08	79.8	74.6	1012	01	8	2	8	2	-	-	35.03
199	0145	3/3	00°02'N	147°50'W	79.7	070	09	80.0	74.3	1009	02	8	2	8	2	-	-	-
200	0555	3/3	00°32'N	147°52'W	79.2	070	10	79.0	75.5	1010	02	8	2	8	2	-	-	35.05
201	1657	3/3	01°10'N	148°04'W	79.7	080	09	79.5	75.0	1012	02	8	2	8	2	-	-	-
202	2204	3/3	01°08'N	148°06'W	80.2	100	12	80.0	75.2	1011	03	8	4	8	2	-	-	35.05
203	0127	3/4	01°01'N	147°56'W	80.2	100	09	79.5	74.6	1008	02	8	3	8	2	-	-	-
204	0529	3/4	01°32'N	147°56'W	80.0	100	10	79.0	75.0	1010	02	8	3	8	2	-	-	35.05
205	1657	3/4	02°03'N	148°04'W	79.9	080	10	80.0	76.0	1011	02	8	5	8	2	-	-	-
206	2212	3/4	02°00'N	148°06'W	80.3	070	15	80.0	74.8	1010	02	8	4	8	2	-	-	35.08
207	0135	3/5	01°52'N	147°58'W	80.5	090	12	80.1	75.1	1008	02	8	2	8	2	-	-	-
208	0554	3/5	02°24'N	147°58'W	80.3	080	14	79.8	75.3	1009	01	8	2	8	2	-	-	35.05
209	1656	3/5	03°02'N	148°05'W	79.9	060	16	80.0	76.0	1009	03	8	6	8	2	-	-	-
210	2158	3/5	03°01'N	148°07'W	80.2	080	18	81.0	75.5	1008	02	8	6	8	3	-	-	35.05

Table 4.--Observations at bathythermograph lowerings, John R. Manning cruise 34 (coded according to H.O. Pub. 606-c, first edition, 1951) (cont'd)

Ser. No.	Time, GMT	Date, 1957	Latitude	Longitude	Bkt. temp., °F.	Wind		Air temp.		Barometer, mb.	Weather	Clouds		Visibility	Sea	Swell		Surf. sal., ‰
						Dir., °T.	Force, kt.	Dry bulb, °F.	Wet bulb, °F.			Type	Cover			Dir. °T.	Amt.	
211	0115	3/6	02°55'N	148°01'W	80.4	060	14	80.0	76.0	1007	50	8	6	8	3	-	-	-
212	0556	3/6	03°30'N	148°26'W	80.1	080	16	80.5	76.0	1010	01	8	1	8	2	-	-	35.08
213	1004	3/6	04°00'N	148°40'W	80.0	070	14	80.2	76.0	1011	02	8	1	8	2	-	-	35.10
214	1400	3/6	04°28'N	148°52'W	80.0	080	16	80.1	75.9	1009	02	8	1	8	2	-	-	35.07
215	1755	3/6	04°53'N	149°04'W	80.4	080	20	81.3	76.0	1012	03	8	5	8	3	-	-	35.05
216	2152	3/6	05°17'N	149°17'W	81.2	060	18	81.4	76.0	1010	02	8,4	5	8	3	-	-	34.92
217	0153	3/7	05°40'N	149°30'W	81.3	050	18	82.0	76.2	1008	02	8	5	8	3	-	-	34.79
218	0546	3/7	06°04'N	149°42'W	81.2	070	20	81.8	76.8	1010	01	8	2	8	3	-	-	34.81
219	1158	3/7	06°38'N	149°58'W	80.8	070	20	80.2	76.0	1010	03	8	3	8	3	-	-	-
220	1752	3/7	07°14'N	150°16'W	80.9	100	15	77.0	75.0	1012	21	7	8	7	3	-	-	34.74
221	2351	3/7	07°52'N	150°38'W	80.5	060	20	79.5	75.0	1010	01	7	6	8	4	-	-	-
222	0550	3/8	08°27'N	151°00'W	79.8	060	22	79.0	75.3	1011	01	8	4	8	4	-	-	34.81
223	1159	3/8	09°08'N	151°24'W	79.3	070	21	78.1	74.6	1011	01	8	3	8	3	-	-	-
224	1752	3/8	09°49'N	151°48'W	79.6	080	20	79.0	74.3	1013	03	8	6	8	3	-	-	34.60
225	2349	3/8	10°28'N	152°12'W	79.3	050	20	78.4	73.8	1011	02	8,4	6	8	3	-	-	-
226	0550	3/9	11°06'N	152°36'W	79.0	080	18	79.0	74.1	1012	02	8	6	8	3	-	-	34.43
227	1158	3/9	11°46'N	152°59'W	78.0	070	21	77.0	74.1	1012	01	8	4	8	3	-	-	-
228	1750	3/9	12°25'N	153°22'W	77.3	080	19	77.0	72.2	1014	03	8,4	7	8	3	-	-	34.36
229	2352	3/9	13°07'N	153°45'W	77.0	060	24	76.1	72.4	1012	02	4,8	6	8	4	-	-	-
230	0553	3/10	13°38'N	154°01'W	76.1	060	27	75.2	71.0	1014	02	8	6	8	4	-	-	34.47
231	1202	3/10	14°15'N	154°22'W	74.8	080	21	73.5	69.2	1014	02	8	6	8	4	-	-	-
232	1750	3/10	14°53'N	154°44'W	74.9	050	18	75.2	70.9	1016	02	8,4	6	8	4	-	-	34.42
233	2352	3/10	15°32'N	155°08'W	75.2	060	20	76.0	70.0	1015	02	5,8	8	8	4	-	-	-
234	0553	3/11	16°09'N	155°32'W	74.5	060	20	73.5	68.5	1016	02	4,8	7	8	3	-	-	34.78
235	1157	3/11	16°54'N	155°50'W	74.0	060	19	73.2	67.0	1015	03	4,8	8	7	3	-	-	-
236	1754	3/11	17°38'N	156°08'W	73.4	070	16	72.8	67.0	1017	02	5,8	8	8	3	-	-	35.01
237	2355	3/11	18°24'N	156°28'W	73.6	080	16	73.6	68.0	1017	01	4,8	3	8	3	-	-	-
238	0554	3/12	19°09'N	156°49'W	73.8	130	13	73.4	67.7	1017	02	6,8	3	8	2	-	-	34.90
239	1200	3/12	19°56'N	157°11'W	74.0	230	09	70.4	67.8	1017	50	7	8	7	2	-	-	-
240	1752	3/12	20°43'N	157°35'W	74.4	060	14	73.6	67.0	1018	01	6,8	5	8	2	-	-	34.90

Table 5.--Surface salinity, inorganic phosphate, and temperature observations, Charles H. Gilbert cruise 32

Date, 1957	Time, GMT	Position		Salinity, ‰	PO_4-P, µg at./L.	Temperature, °F.
		Latitude	Longitude			
1/12	0800	21°25'N	158°16'W	34.90	0.28	75.7
1/12	0955	21°25'N	158°26'W	34.88	0.25	76.0
1/12	1145	21°25'N	158°36'W	34.90	0.14	75.8
1/12	1300	21°25'N	158°46'W	34.90	0.25	75.9
1/12	1410	21°25'N	158°56'W	34.88	0.17	76.1
1/12	1510	21°34'N	158°55'W	34.88	0.17	75.9
1/12	1615	21°35'N	158°46'W	34.90	0.19	75.4
1/12	1800	21°25'N	158°36'W	34.88	0.26	75.7
1/12	1920	21°36'N	158°26'W	34.92	0.51	75.3
1/12	2030	21°40'N	158°16'W	34.94	0.17	75.2
1/12	2137	21°43'N	158°07'W	34.94	0.13	75.0
1/12	2300	21°47'N	157°56'W	34.97	0.21	74.7
1/13	0045	21°57'N	157°56'W	34.96	0.67	74.8
1/13	0155	22°07'N	157°56'W	34.96	0.14	75.6
1/13	0310	22°17'N	157°56'W	34.96	0.15	74.4
1/13	0440	22°16'N	157°47'W	34.97	0.15	74.0
1/13	0630	22°06'N	157°47'W	34.97	0.18	74.0
1/13	0800	21°58'N	157°46'W	34.94	0.17	74.4
1/13	0910	21°46'N	157°44'W	34.94	0.21	74.3
1/13	1035	21°37'N	157°46'W	34.94	0.16	74.3
1/13	1730	20°53'N	157°13'W	34.90	0.14	74.3
1/14	2330	17°08'N	155°02'W	34.54	0.25	75.9
1/15	2330	14°19'N	153°01'W	34.74	0.34	75.3
1/16	2330	11°20'N	151°26'W	34.29	0.21	76.9
1/17	2330	08°30'N	149°52'W	34.33	0.14	80.0
1/18	2330	05°48'N	147°50'W	34.92	0.38	78.7
1/19	0530	05°08'N	147°22'W	34.78	0.21	80.0
1/19	1130	04°25'N	146°52'W	34.88	0.32	79.7
1/19	1740	03°42'N	146°22'W	34.97	0.49	78.3
1/19	2330	03°04'N	145°58'W	34.97	0.48	78.5
1/20	0530	02°23'N	145°34'W	34.96	0.50	78.3
1/20	1130	01°42'N	145°15'W	34.97	0.36	76.7
1/20	1730	01°00'N	144°54'W	34.94	0.53	76.3
1/20	2330	00°18'N	144°30'W	34.99	0.53	76.7
1/21	0530	00°25'S	144°00'W	35.19	0.61	76.4
1/21	1130	01°12'S	143°36'W	35.26	0.63	77.0
1/21	1730	02°00'S	143°14'W	35.35	0.55	77.8
1/21	2330	02°49'S	142°51'W	35.37	0.64	78.1
1/22	0530	03°36'S	142°30'W	35.41	0.56	78.3
1/22	1130	04°23'S	142°10'W	35.34	0.60	78.2
1/22	1730	05°10'S	141°49'W	35.39	0.60	78.4
1/22	2330	05°59'S	141°28'W	35.34	0.56	78.3
1/23	0530	06°50'S	141°08'W	35.41	0.60	79.0
1/23	1130	07°40'S	140°50'W	35.64	0.60	79.2
1/23	1730	08°27'S	140°31'W	35.75	0.43	80.9
1/24	1530	08°56'S	140°05'W	35.73	-	80.7
1/25	1730	09°12'S	140°07'W	35.73	-	80.7
1/25	2330	09°28'S	140°00'W	35.73	-	81.2
1/26	2025	09°34'S	139°55'W	35.75	-	81.2
1/27	1550	09°48'S	139°02'W	35.28	-	81.6

Table 5.--Surface salinity, inorganic phosphate, and temperature observations, Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Time, GMT	Position		Salinity, ‰	PO_4-P, µg at./L.	Temperature, °F.
		Latitude	Longitude			
1/27	1820	09°58'S	139°01'W	-	0.44	81.0
1/27	2330	10°24'S	138°45'W	-	0.44	81.3
1/28	1607	09°36'S	138°47'W	-	0.47	-
1/28	1735	09°28'S	138°53'W	-	0.47	80.8
1/28	2042	09°17'S	139°06'W	-	0.33	-
1/28	2200	09°10'S	139°15'W	-	0.42	-
1/28	2330	09°01'S	139°36'W	-	0.40	82.3
1/29	0115	Hananai Bay		34.79	-	85.5
1/29	0310	08°56'S	139°35'W	27.00	-	85.5
1/29	1537	08°56'S	139°28'W	-	0.40	-
1/29	1730	08°50'S	139°16'W	-	0.56	80.7
1/29	1930	08°46'S	139°15'W	-	0.45	-
1/29	2135	08°29'S	139°24'W	-	0.46	-
1/29	2330	08°16'S	139°30'W	-	0.44	81.6
1/30	0217	07°58'S	139°46'W	-	0.40	-
1/30	1540	07°52'S	140°01'W	-	0.40	80.6
1/30	1730	07°47'S	140°16'W	-	0.60	80.2
1/30	1930	07°48'S	140°26'W	-	0.52	-
1/30	2135	07°58'S	140°42'W	-	0.42	-
1/30	2330	08°10'S	140°38'W	-	0.44	81.0
1/31	0135	08°24'S	140°26'W	-	0.37	-
1/31	0340	08°36'S	140°15'W	-	0.49	-
1/31	1600	08°50'S	140°02'W	35.84	-	-
2/1	1640	08°56'S	140°15'W	35.70	-	81.5
2/4	2340	08°54'S	140°02'W	24.13	-	82.0
2/5	1535	08°54'S	140°05'W	35.70	-	81.0
2/6	0200	08°50'S	140°04'W	35.75	-	81.7
2/7	2050	08°56'S	140°05'W	35.59	-	84.5
2/8	2220	08°50'S	140°04'W	35.62	-	81.9
2/25	1610	09°54'S	139°05'W	35.73	-	81.5
2/27	1925	09°54'S	139°05'W	35.62	-	82.5
2/27	-	09°54'S	139°04'W	35.84	-	-
2/27	2220	09°48'S	139°02'W	33.73	-	82.5
3/11	1627	08°56'S	140°05'W	35.88	-	82.2
3/12	2335	08°41'S	140°22'W	35.82	0.44	83.3
3/13	0530	07°56'S	140°46'W	35.48	0.54	81.5
3/13	1130	07°09'S	141°11'W	35.50	0.65	81.5
3/13	1730	06°46'S	141°23'W	35.34	0.60	81.2
3/13	2330	05°36'S	141°59'W	35.25	0.56	82.2
3/14	0530	04°51'S	142°24'W	35.21	0.56	80.8
3/14	1130	04°04'S	142°51'W	35.28	0.58	80.9
3/14	1730	03°18'S	143°16'W	35.19	0.57	81.1
3/14	2332	02°35'S	143°40'W	35.17	0.53	81.7
3/15	0530	01°52'S	144°06'W	35.12	0.59	80.5
3/15	1130	-	144°31'W	35.14	0.63	79.1
3/15	1745	00°25'S	145°08'W	35.10	0.60	79.5
3/15	2330	00°20'N	145°20'W	34.97	0.61	83.5
3/16	0530	01°08'N	145°46'W	35.03	0.49	81.6
3/16	1130	01°57'N	146°12'W	35.03	0.53	81.1
3/16	1730	02°46'N	146°38'W	34.94	0.91	80.0

Table 5.--Surface salinity, inorganic phosphate, and temperature observations, Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Time, GMT	Position		Salinity, ‰	PO_4-P, µg at./L.	Temperature, °F.
		Latitude	Longitude			
3/16	2335	03°36'N	147°03'W	34.97	0.54	84.7
3/17	0530	04°22'N	147°24'W	34.88	0.51	80.0
3/17	1130	05°09'N	147°44'W	34.94	0.46	80.1
3/17	2330	06°40'N	148°28'W	34.87	0.36	83.7
3/18	2330	09°17'N	150°19'W	34.33	0.29	79.1
3/19	2328	12°06'N	152°01'W	34.25	0.23	78.1
3/20	2330	15°03'N	153°38'W	34.31	0.28	76.8
3/21	2330	18°01'N	155°46'W	34.67	0.21	75.2
3/22	2330	20°52'N	157°44'W	34.90	0.22	74.0
3/23	0600	21°27'N	158°12'W	34.88	-	75.5

Table 6.--Weather observations (USWB 1210-F), Hugh M. Smith cruise 38[1/]

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
1/13	18.9°N	155.8°W	0000	99	12	10	58	1	1015.2	7	2.0	77.6	65.5	76.0	5	5	8	X	0	0	12	2	4
1/13	18.5°N	155.3°W	0600	99	10	24	01	2	1018.0	2	2.5	72.8	64.9	74.5	7	7	8	X	X	X	10	2	4
1/13	18.2°N	154.5°W	1200	99	05	14	02	2	1015.6	7	2.5	72.9	62.1	74.1	8	8	8	X	X	X	XX	X	3
1/13	17.7°N	153.6°W	1800	99	06	17	15	2	1015.6	2	0.7	71.0	64.0	75.2	8	4	9	X	X	X	06	3	4
1/14	17.3°N	153.1°W	0000	99	05	17	02	2	1011.9	6	3.7	71.0	64.9	75.3	6	6	2	X	0	0	05	2	3
1/14	16.8°N	152.2°W	0600	99	05	16	02	2	1012.9	2	1.0	71.5	64.5	74.8	7	6	6	X	X	X	05	2	3
1/14	16.4°N	151.4°W	1200	99	07	14	02	2	1011.5	7	2.7	71.1	66.9	73.7	8	4	8	X	3	X	06	3	4
1/14	15.9°N	150.7°W	1800	99	12	13	02	2	1011.9	2	1.7	73.8	65.0	73.7	8	8	8	X	3	X	08	3	2
1/15	15.4°N	149.9°W	0000	99	07	14	02	2	1008.8	7	3.4	75.0	69.1	75.5	8	8	8	X	X	X	06	2	3
1/15	14.9°N	149.1°W	0600	99	11	16	02	2	1011.5	2	1.5	75.5	69.3	75.5	8	3	8	X	7	X	07	3	4
1/15	14.4°N	148.4°W	1200	99	08	13	02	2	1011.2	6	1.7	75.5	71.0	75.8	8	8	8	X	X	X	08	2	3
1/15	14.0°N	147.4°W	1800	99	06	17	02	2	1008.8	2	1.0	75.7	71.4	76.5	7	7	8	X	0	0	06	2	3
1/16	13.5°N	146.7°W	0000	99	09	19	15	2	1009.5	7	1.4	78.0	73.4	77.4	7	3	8	X	4	0	06	4	3
1/16	13.0°N	145.7°W	0600	99	08	22	01	2	1011.2	2	6.3	76.2	73.0	76.0	7	X	8	X	4	X	06	X	3
1/16	12.5°N	144.9°W	1200	99	07	19	02	2	1010.5	7	0.7	75.5	72.6	78.4	7	X	X	7	3	X	06	2	4
1/16	12.0°N	144.0°W	1800	99	08	22	01	0	1011.9	1	1.0	76.8	73.9	75.4	1	1	1	4	0	0	07	2	3
1/17	11.6°N	143.6°W	0000	99	07	16	03	1	1009.5	8	1.7	78.0	73.9	76.6	4	3	1	X	4	0	06	3	4
1/17	11.2°N	142.8°W	0600	99	07	22	03	1	1011.9	1	2.2	77.8	74.5	77.0	6	6	8	X	X	X	07	2	3
1/17	10.7°N	142.1°W	1200	99	05	28	51	2	1011.2	8	0.7	76.5	73.3	76.9	8	8	8	X	X	X	06	2	5
1/17	10.4°N	141.4°W	1800	99	06	26	03	1	1012.2	3	0.3	77.3	73.7	76.9	2	2	8	4	0	0	06	2	5
1/18	10.0°N	140.7°W	0000	98	06	25	03	1	1010.2	7	1.7	79.3	73.4	76.0	5	3	9	X	4	9	06	3	5
1/18	09.6°N	139.9°W	0600	99	06	24	02	2	1011.2	1	2.0	77.1	73.0	77.0	5	1	2	X	4	9	06	2	4
1/18	09.1°N	139.1°W	1200	99	04	28	02	1	1010.5	7	0.7	76.2	71.9	76.8	2	2	1	X	X	X	05	2	4
1/18	08.6°N	138.4°W	1800	99	05	25	02	2	1011.5	1	0.3	79.0	74.0	79.0	8	8	8	5	X	X	05	2	4
1/19	08.3°N	137.7°W	0000	99	06	20	15	2	1007.5	7	2.7	79.4	73.7	79.3	7	7	7	X	0	0	05	4	4
1/19	07.8°N	137.1°W	0600	99	05	26	02	2	1009.5	1	2.2	78.2	74.8	79.3	5	2	1	X	4	X	07	X	4
1/19	07.3°N	136.3°W	1200	99	02	24	02	2	1007.5	7	1.0	79.4	75.5	79.0	7	7	4	X	X	X	06	2	4
1/19	06.8°N	135.5°W	1800	99	05	06	21	2	1010.5	1	0.4	77.0	74.9	78.7	8	8	4	5	X	X	06	2	4
1/20	06.4°N	134.3°W	0000	99	11	06	15	2	1008.1	6	1.4	78.9	75.0	79.6	8	8	3	X	X	X	XX	X	3
1/20	05.8°N	133.5°W	0600	99	15	08	02	2	1011.5	1	2.0	80.0	75.0	79.0	8	8	X	X	X	X	XX	X	3
1/20	05.4°N	132.7°W	1200	99	13	15	02	2	1009.8	7	0.7	79.4	74.6	78.8	8	8	4	X	X	X	XX	X	3
1/20	04.8°N	132.0°W	1800	99	14	18	02	1	1012.2	1	0.1	80.0	75.0	79.1	4	4	4	4	3	0	12	2	3
1/21	04.2°N	131.3°W	0000	99	15	18	01	1	1008.1	7	2.0	79.0	73.7	76.9	4	1	1	X	4	5	15	3	4
1/21	03.8°N	130.6°W	0600	99	13	17	01	0	1011.2	1	1.7	78.2	74.0	76.8	1	1	1	X	X	X	15	X	3
1/21	03.2°N	129.9°W	1200	99	13	12	02	0	1010.5	7	0.7	77.6	71.4	77.6	1	1	1	X	X	X	15	X	2
1/21	02.7°N	129.0°W	1800	99	14	12	03	1	1013.9	1	0.8	80.0	73.6	77.9	4	4	2	X	0	0	11	2	2
1/22	02.4°N	128.4°W	0000	99	14	10	01	0	1009.8	7	2.7	79.8	72.6	79.0	1	1	1	X	7	0	14	3	2
1/22	01.8°N	127.6°W	0600	99	13	12	02	0	1011.5	1	2.0	78.0	73.0	77.5	1	1	0	X	2	X	13	2	2
1/22	01.3°N	126.9°W	1200	99	09	10	02	0	1010.2	7	1.0	76.2	70.5	78.5	1	1	X	X	4	X	XX	X	X
1/22	00.5°N	126.0°W	1800	99	09	08	02	0	1013.2	1	1.0	79.0	73.7	76.5	2	2	3	4	0	0	10	3	2

[1/] All columns in USWB 1210-F are not included here. Those deleted are:

Column	2	Day of week	Column	23	Course of ship
"	3	Octant	"	24	Speed of ship
"	13	Barometer as read	"	31	Diff. sea-air, °F.
"	14	Barometer as corrected	"	32	Dew point, °F.
"	17	Air temperature, °F.			

Table 6.--Weather observations (USWB 1210-F), Hugh M. Smith cruise 38 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
1/23	00.3°N	125.5°W	0000	99	09	09	02	0	1009.5	7	2.0	77.0	72.3	75.2	1	1	1	5	0	0	10	4	3
1/23	00.0°	124.8°W	0600	99	15	12	02	0	1011.9	1	1.4	78.3	75.8	76.8	1	1	1	X	X	X	XX	X	X
1/23	00.0°	123.9°W	1200	99	13	13	02	0	1010.5	6	0.7	76.8	71.9	75.2	1	1	1	X	X	X	XX	X	X
1/23	00.0°	122.5°W	2200	99	15	12	02	0	1010.5	7	1.4	80.6	75.0	76.4	1	1	1	X	0	0	13	2	2
1/24	00.0°	121.5°W	0600	99	13	15	02	0	1012.9	2	1.0	77.5	73.7	76.3	1	1	1	X	X	X	13	2	2
1/24	00.0°	120.6°W	1200	99	14	15	02	0	1011.2	7	0.7	75.5	72.3	75.9	3	3	1	X	0	0	14	3	3
1/24	00.0°	120.0°W	1800	99	14	16	02	0	1012.9	7	0.7	79.3	74.1	76.0	1	1	1	X	0	0	14	3	3
1/25	00.3°N	119.3°W	0000	99	14	15	02	0	1009.5	6	0.3	78.2	73.1	76.0	4	4	1	X	0	0	14	3	3
1/25	00.0°	118.5°W	0600	99	15	15	02	0	1012.9	2	1.9	76.4	72.6	75.5	2	2	8	X	0	0	15	3	3
1/25	00.0	117.6°W	1200	99	15	14	02	0	1011.2	5	0.7	76.6	72.9	75.0	1	1	X	X	X	X	XX	X	2
1/25	00.0°	117.0°W	1800	99	14	14	01	1	1013.9	1	0.7	78.4	73.5	75.6	3	2	1	X	0	1	10	2	2
1/26	00.0°	116.2°W	0000	99	14	14	03	1	1010.2	7	1.4	77.3	71.9	75.8	7	7	5	X	0	5	14	3	3
1/26	00.2°S	115.0°W	0600	99	15	12	02	X	1012.9	0	0.3	77.8	74.6	75.2	X	X	X	X	X	X	XX	X	2
1/26	00.0°	113.5°W	1800	99	14	14	01	0	1012.5	0	0.3	78.5	73.5	75.4	1	1	1	X	0	1	14	3	3
1/27	00.0°	112.6°W	0000	99	15	16	02	0	1009.1	5	0.7	80.5	77.0	75.5	1	1	2	X	0	0	13	2	3
1/27	00.0°	111.9°W	0600	99	14	14	02	0	1011.5	2	1.0	77.2	74.6	76.1	X	X	X	X	X	X	14	2	3
1/27	00.0°	111.2°W	1200	99	15	13	03	1	1009.8	5	0.7	76.5	71.4	76.5	5	5	X	X	X	X	14	2	3
1/27	00.0°	110.4°W	1800	99	14	14	01	1	1012.5	0	0.6	78.2	74.0	76.3	1	1	1	X	1	0	12	2	2
1/28	00.6°S	110.1°W	0000	99	15	10	03	1	1009.1	6	0.7	76.6	73.0	75.5	7	7	4	X	0	0	15	2	2
1/28	01.5°S	110.1°W	0600	99	18	10	02	1	1011.5	1	1.0	76.3	72.9	75.0	8	7	4	X	X	X	16	3	3
1/28	03.4°S	110.0°W	1800	99	15	16	03	2	1012.5	0	0.3	76.8	72.5	75.9	8	8	4	X	X	X	16	3	3
1/29	04.0°S	110.0°W	0000	99	13	12	02	1	1010.2	6	1.4	76.6	72.1	76.2	6	4	1	X	4	4	14	3	3
1/29	05.0°S	109.9°W	0600	99	15	15	02	1	1012.2	1	1.0	75.7	72.4	75.7	3	3	1	X	X	X	15	3	3
1/29	05.8°S	109.9°W	1200	99	12	14	02	0	1010.8	5	0.2	75.1	71.1	76.0	3	3	X	X	X	X	14	3	2
1/29	06.5°S	110.0°W	1800	99	12	14	01	0	1012.5	0	1.0	77.9	72.1	76.7	1	1	1	5	0	0	12	4	3
1/30	07.3°S	110.0°W	0000	99	14	15	03	1	1009.8	6	0.7	77.5	73.5	77.2	4	4	2	5	0	0	16	2	2
1/30	08.2°S	110.0°W	0600	99	10	11	02	0	1012.2	1	0.5	76.1	70.7	76.5	X	X	X	X	X	X	XX	X	X
1/30	09.0°S	110.0°W	1200	99	14	10	02	0	1011.2	5	0.3	75.1	70.4	76.6	2	2	X	X	X	X	14	3	3
1/30	11.0°S	110.0°W	1900	99	10	10	02	0	1012.9	0	0.3	77.6	72.1	76.8	1	1	1	X	0	0	14	3	3
1/31	11.5°S	110.0°W	0600	99	12	06	02	0	1012.2	1	1.0	76.1	69.0	77.2	3	3	1	X	X	X	12	3	3
1/31	13.2°S	110.0°W	1800	99	13	04	02	0	1012.5	4	0.0	78.5	70.9	79.6	1	1	8	X	0	0	12	3	0
2/1	13.7°S	110.0°W	0000	99	14	04	03	0	1010.8	6	1.0	80.1	72.7	79.6	4	3	8	5	4	0	16	3	3
2/1	13.7°S	110.2°W	1300	98	09	08	60	X	1011.2	1	0.9	75.0	73.5	79.0	8	8	7	5	X	X	12	3	3
2/2	13.5°S	110.2°W	0000	99	04	06	20	6	1009.1	7	0.7	77.6	73.0	79.4	8	8	4	X	X	X	12	3	2
2/3	13.6°S	110.5°W	0300	99	08	08	00	X	1010.5	2	0.9	79.1	75.1	79.5	X	X	X	X	X	X	XX	X	X
2/4	13.6°S	110.7°W	0200	99	10	10	02	0	1011.5	X	XX	79.9	75.9	79.9	3	3	1	X	0	0	13	4	3
2/4	13.6°S	111.1°W	2000	99	09	10	02	X	1011.9	7	XX	79.7	73.8	79.9	2	2	8	X	0	0	11	2	3
2/5	13.6°S	111.2°W	0200	99	09	11	03	0	1011.2	2	0.7	79.4	76.2	79.7	4	4	8	X	0	0	11	2	3
2/5	13.8°S	111.4°W	2000	99	09	10	02	1	1010.8	X	XX	80.4	75.0	79.9	2	2	8	X	0	0	08	2	3
2/6	13.8°S	111.5°W	0300	99	13	10	02	1	1010.8	2	0.9	79.5	76.9	79.9	4	4	8	X	X	X	11	2	3
2/6	13.7°S	111.7°W	2000	99	07	12	02	1	1009.8	X	XX	80.0	73.8	80.1	2	2	8	X	0	0	08	2	3
2/7	13.7°S	111.9°W	0200	99	09	12	02	0	1010.2	2	0.5	79.9	77.0	80.1	3	3	8	X	0	0	08	2	3
2/7	14.0°S	112.0°W	2000	99	09	18	03	2	1010.8	X	XX	77.9	73.3	79.4	7	7	8	X	0	0	09	2	3
2/8	14.0°S	112.3°W	0200	99	09	13	01	1	1010.5	2	0.7	79.3	76.0	79.6	3	3	8	X	0	0	09	2	3
2/8	14.1°S	112.5°W	2000	99	09	13	01	1	1011.9	7	0.7	79.7	74.2	80.2	3	3	8	X	0	0	09	2	3
2/9	14.1°S	112.7°W	0200	99	09	13	02	0	1010.8	3	0.5	79.4	74.9	80.1	3	3	8	X	0	0	09	2	3

Table 6.--Weather observations (USWB 1210-F), Hugh M. Smith cruise 38 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
2/9	14.4°S	112.6°W	2100	99	09	13	02	0	1010.5	X	XX	79.8	73.2	80.1	2	2	8	X	0	0	09	2	3
2/10	14.5°S	112.6°W	0200	99	08	14	02	0	1010.2	2	0.7	79.7	75.6	80.2	3	3	8	X	0	0	09	2	3
2/10	14.2°S	112.6°W	2000	99	09	16	02	0	1009.8	X	XX	80.0	73.5	80.1	3	3	8	4	0	0	09	2	3
2/11	14.3°S	112.7°W	0200	99	06	13	02	0	1009.5	2	0.2	79.8	77.0	80.3	4	4	8	4	0	0	09	2	3
2/11	14.2°S	113.0°W	2000	99	07	11	03	0	1010.5	X	XX	79.6	73.2	80.3	3	3	8	X	0	0	09	2	3
2/12	14.2°S	112.9°W	0300	99	09	14	01	1	1010.8	2	0.9	79.6	75.7	80.6	3	3	8	X	0	0	09	2	3
2/13	14.3°S	113.4°W	0200	99	09	15	03	0	1010.8	4	0.0	79.9	78.2	80.3	4	3	8	4	0	1	09	2	3
2/13	14.3°S	113.5°W	1900	99	06	17	02	2	1012.5	6	0.3	80.5	78.4	80.3	5	3	8	4	0	1	09	2	3
2/14	14.4°S	113.5°W	0100	99	09	10	02	1	1010.8	2	0.3	80.2	79.0	80.1	5	4	8	4	0	1	09	2	3
2/14	14.4°S	113.7°W	1900	99	09	15	02	2	1011.2	7	0.3	80.1	77.8	80.4	8	7	8	4	0	1	09	2	4
2/15	14.4°S	113.8°W	0200	99	09	15	01	1	1009.5	2	0.5	79.9	76.8	80.4	3	3	8	X	0	0	09	2	4
2/15	14.4°S	114.1°W	1900	99	08	12	16	8	1010.5	X	XX	78.2	72.9	80.2	8	8	8	4	X	X	09	2	4
2/16	14.4°S	114.2°W	0200	99	11	15	16	1	1009.5	3	0.3	79.9	75.6	80.4	4	3	8	4	0	1	09	2	4
2/16	14.3°S	114.5°W	2000	99	08	12	01	0	1010.5	X	XX	80.7	73.6	80.4	2	1	8	4	0	1	09	2	3
2/17	14.3°S	114.6°W	0200	99	09	10	01	0	1010.2	2	0.3	79.9	74.0	80.3	1	1	8	4	0	0	09	2	3
2/18	14.2°S	115.3°W	0200	99	03	21	02	0	1011.2	2	0.5	81.2	76.5	81.2	2	2	8	X	0	0	09	2	2
2/18	14.0°S	116.3°W	1500	99	07	13	02	2	1011.9	2	0.5	81.7	77.5	80.8	6	4	8	4	X	1	09	2	3
2/18	13.9°S	116.6°W	2000	99	04	16	03	2	1011.5	X	XX	82.8	78.7	81.0	7	5	8	4	7	X	10	2	3
2/19	13.8°S	117.3°W	0300	99	11	17	01	1	1011.5	2	1.0	81.5	78.3	80.5	2	2	X	X	X	X	10	2	3
2/19	13.6°S	118.2°W	1500	99	10	17	01	1	1011.5	2	0.7	81.9	77.8	80.1	6	6	8	X	0	0	10	2	3
2/20	13.5°S	118.3°W	0100	99	10	20	01	1	1010.5	3	0.2	80.9	77.9	80.9	3	2	8	4	0	6	10	2	3
2/20	12.8°S	119.5°W	2100	99	06	14	03	2	1012.2	7	1.0	83.1	79.8	80.7	6	6	8	4	0	0	10	2	3
2/21	12.4°S	120.0°W	0300	99	07	13	15	1	1011.5	2	0.7	81.1	79.2	80.5	3	3	8	4	X	X	10	2	3
2/21	10.6°S	122.5°W	1900	99	08	10	01	0	1012.9	8	0.3	83.9	78.5	80.3	1	1	8	4	0	0	10	2	2
2/22	10.1°S	123.0°W	0000	99	11	11	03	0	1010.2	7	1.0	83.0	77.2	80.9	3	3	8	4	0	0	10	2	2
2/22	08.3°S	124.4°W	1600	99	10	05	01	0	1011.5	2	1.0	82.1	79.5	78.9	1	1	8	4	0	0	10	2	2
2/23	07.4°S	126.1°W	0000	99	00	00	03	1	1009.8	7	0.7	88.7	82.5	80.8	4	2	8	4	0	1	10	2	2
2/24	04.5°S	128.6°W	0200	99	06	09	03	1	1010.2	3	0.3	79.8	76.1	80.0	4	1	8	4	0	5	10	2	2
2/24	04.0°S	129.0°W	0600	99	08	12	02	0	1012.2	2	1.4	80.0	78.5	78.9	X	X	X	X	X	X	10	2	2
2/24	01.9°S	129.5°W	1900	99	04	07	01	1	1013.2	0	0.3	80.1	78.4	78.9	3	3	2	4	0	0	10	3	1
2/25	01.4°S	129.6°W	0000	99	07	07	02	0	1009.8	7	1.2	83.5	79.5	79.9	3	3	8	4	0	0	10	3	1
2/25	00.1°S	130.0°W	0600	99	08	06	02	0	1012.2	2	1.0	80.3	77.4	78.1	3	3	8	X	X	X	10	3	1
2/25	01.5°S	130.0°W	1800	99	09	10	02	0	1012.9	2	1.0	79.1	75.4	78.0	3	3	8	X	0	0	10	3	1
2/26	02.1°S	129.9°W	0000	99	11	06	03	1	1009.8	6	0.3	78.9	74.6	80.0	5	2	1	X	4	0	11	3	1
2/26	03.0°S	130.0°W	0600	99	11	07	01	1	1011.5	2	1.0	79.5	75.5	79.4	3	3	1	X	X	X	11	3	1
2/26	04.2°S	130.0°W	1300	99	12	08	02	0	1010.8	2	0.7	78.9	75.2	79.1	3	3	8	4	0	0	11	3	1
2/26	05.0°S	130.1°W	2000	99	11	06	02	1	1011.5	7	1.0	80.2	74.9	80.5	4	4	8	X	0	0	11	3	1
2/27	05.5°S	130.1°W	0000	99	11	07	02	0	1009.1	7	1.4	80.8	76.1	81.0	1	1	1	5	0	0	11	3	2
2/27	06.5°S	129.9°W	0800	99	11	10	02	0	1011.2	X	XX	80.3	75.1	81.0	1	1	X	X	X	X	XX	X	2
2/27	08.2°S	130.0°W	1800	99	09	12	02	0	1013.2	2	2.0	81.1	75.6	80.7	1	1	1	5	4	0	14	4	3
2/28	09.0°S	130.0°W	0100	99	10	09	02	0	1009.5	7	1.0	80.9	74.8	81.8	1	1	8	X	0	0	13	2	2
2/28	11.7°S	130.0°W	2000	99	07	11	02	0	1012.9	2	1.0	83.0	75.2	82.7	2	2	1	X	0	0	13	2	2
2/28	12.3°S	130.0°W	2300	99	08	04	03	1	1010.5	7	1.0	82.5	77.6	85.5	6	6	8	4	0	0	13	2	2
3/1	13.5°S	130.0°W	0800	99	00	00	01	5	1011.9	0	0.0	81.7	76.7	83.7	X	X	X	X	X	X	XX	3	0
3/1	14.4°S	130.0°W	1500	99	00	00	03	X	1011.9	2	0.3	78.0	74.8	82.2	6	5	8	4	9	0	31	2	1

Table 6.--Weather observations (USWB 1210-F), Hugh M. Smith cruise 38 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
3/1	15.2°S	130.0°W	1800	99	07	02	03	2	1012.9	1	0.7	83.3	78.0	83.0	7	6	4	X	6	0	12	2	1
3/2	15.9°S	129.9°W	0000	99	36	11	21	6	1010.5	7	1.7	81.6	76.6	82.9	5	5	2	5	9	0	31	3	1
3/2	16.5°S	130.0°W	0600	99	22	05	00	X	1012.5	2	1.0	81.2	73.1	83.2	X	X	X	X	X	X	XX	X	X
3/2	18.0°S	130.2°W	1800	99	34	08	15	0	1012.9	2	1.7	82.7	74.3	82.3	3	3	2	5	0	1	15	3	3
3/3	18.0°S	131.2°W	0000	99	32	12	01	2	1010.5	6	0.7	82.3	75.2	82.7	5	5	2	X	6	0	32	2	3
3/3	18.0°S	132.0°W	0600	99	31	16	21	2	1012.9	2	1.0	81.3	74.4	82.3	X	X	X	X	X	X	31	2	3
3/3	18.0°S	133.5°W	1800	99	31	16	15	2	1012.5	2	0.3	79.6	76.5	81.8	7	7	8	X	0	0	31	2	3
3/4	17.9°S	135.2°W	0600	98	33	18	00	2	1014.6	2	1.0	81.6	78.8	82.2	X	X	X	X	X	X	31	2	3
3/4	17.6°S	136.2°W	1800	99	10	26	16	6	1010.8	1	0.9	77.8	76.0	81.7	8	8	5	X	X	X	34	2	3
3/5	17.8°S	137.0°W	0000	99	35	22	16	2	1007.8	7	2.0	80.7	76.2	81.7	8	X	7	5	7	X	34	2	3
3/5	18.0°S	137.6°W	0600	98	32	18	00	X	1009.1	2	0.7	81.2	78.5	82.7	X	X	X	X	X	X	34	2	3
3/5	17.6°S	139.5°W	1800	99	35	18	15	2	1009.5	2	1.7	81.1	75.7	81.8	7	4	1	5	7	8	34	2	3
3/6	17.9°S	140.2°W	0000	90	34	XX	65	2	1008.1	7	1.0	77.5	74.9	82.3	9	0	X	0	X	X	34	2	3
3/6	18.0°S	139.0°W	0400	98	34	06	02	2	1009.1	X	XX	81.8	75.5	82.6	8	7	8	X	X	X	XX	X	2
3/6	18.0°S	140.5°W	1800	99	34	15	02	2	1011.5	1	1.0	83.6	76.9	82.7	5	5	2	X	0	0	49	X	2
3/7	18.0°S	141.3°W	0000	99	33	16	02	2	1009.8	7	1.2	85.0	78.4	82.5	5	5	2	X	0	0	31	2	2
3/7	18.0°S	143.3°W	1500	99	30	22	60	2	1010.2	0	0.3	80.8	76.9	83.0	7	4	8	X	9	0	31	2	2
3/7	18.0°S	143.9°W	1800	99	33	25	15	2	1011.2	0	1.7	79.7	75.9	82.9	8	4	7	5	7	X	31	2	3
3/8	18.0°S	144.5°W	0000	99	31	22	02	2	1009.5	7	2.0	82.1	75.8	82.9	8	3	7	5	7	X	31	2	3
3/8	18.0°S	145.5°W	0600	99	29	16	02	2	1010.2	2	1.0	82.2	76.5	82.8	8	4	8	X	X	X	31	2	3
3/8	18.1°S	146.8°W	1800	99	30	11	01	2	1010.2	2	0.7	83.6	76.5	83.1	5	3	2	5	7	6	29	2	3
3/9	18.0°S	147.9°W	0000	99	30	16	02	2	1008.1	7	0.5	85.0	80.8	82.7	7	6	7	X	1	0	32	2	3
3/15	12.6°S	145.0°W	1900	99	10	08	02	2	1011.9	1	0.7	84.9	80.5	84.0	5	2	8	X	3	0	12	2	2
3/16	11.3°S	145.0°W	0600	99	10	05	21	2	1010.5	2	1.0	82.3	78.9	84.0	7	X	X	X	X	X	XX	X	2
3/16	10.9°S	145.0°W	1200	99	09	08	01	2	1009.5	7	0.7	82.3	76.4	83.7	5	5	2	X	X	X	XX	X	2
3/16	10.0°S	145.0°W	1800	99	05	08	02	1	1011.5	2	1.9	83.9	78.3	83.6	2	2	2	5	0	5	06	3	2
3/17	09.0°S	145.0°W	0000	99	03	06	02	0	1010.2	7	0.9	83.6	77.0	84.1	3	2	2	5	6	0	06	3	2
3/17	08.0°S	145.3°W	0600	99	04	04	02	1	1011.5	2	1.4	83.9	77.2	84.0	3	3	2	X	X	X	10	3	2
3/17	06.6°S	145.1°W	1800	99	05	09	02	0	1012.9	2	2.0	81.1	76.7	82.0	3	2	1	5	4	1	01	3	2
3/18	05.9°S	145.0°W	0100	99	08	09	02	0	1009.8	7	1.4	82.0	75.9	83.0	2	2	2	5	0	1	01	3	2
3/18	05.0°S	145.0°W	0600	99	10	10	02	0	1010.2	2	0.7	82.1	76.9	82.0	2	X	X	X	X	X	08	3	2
3/18	04.4°S	145.0°W	1200	99	09	12	02	0	1009.5	6	1.7	80.7	76.2	81.9	1	1	2	5	0	0	09	3	3
3/18	03.4°S	145.0°W	1800	99	09	13	01	0	1011.2	2	0.7	83.0	77.3	81.7	1	1	8	X	0	0	09	3	2
3/19	03.0°S	145.0°W	0000	99	09	13	02	0	1008.1	7	1.2	84.5	77.8	82.0	2	2	2	X	0	0	08	3	2
3/19	02.1°S	144.9°W	0600	99	08	12	02	0	1008.8	2	0.9	82.1	77.7	81.3	1	1	X	X	X	X	08	3	2
3/19	01.7°S	145.0°W	1200	99	10	11	02	0	1008.1	7	1.0	80.9	77.5	80.4	2	2	8	X	0	0	08	3	2
3/20	00.5°S	145.0°W	0000	99	09	09	02	0	1009.1	7	1.7	83.0	78.0	81.3	1	1	2	5	0	0	06	3	3
3/20	00.0°	145.0°W	0600	99	09	09	02	0	1009.5	2	0.7	81.6	77.1	81.0	1	1	2	X	0	0	06	3	2
3/20	00.7°N	145.0°W	1200	99	07	08	02	0	1009.1	7	0.9	80.0	76.2	80.2	1	1	8	X	0	0	XX	X	1
3/21	02.3°N	145.2°W	0000	99	06	08	02	0	1009.5	7	0.7	81.0	77.0	82.0	1	1	8	X	0	0	02	3	1
3/21	03.1°N	145.9°W	0600	99	06	09	02	0	1010.5	2	0.9	81.6	77.9	81.3	X	X	X	X	X	X	XX	X	X
3/21	04.7°N	147.0°W	1800	99	06	13	02	1	1011.5	2	1.0	80.7	76.9	80.6	5	5	2	X	0	0	06	2	3
3/22	05.6°N	147.4°W	0000	99	07	14	01	1	1009.1	6	2.0	82.0	78.2	82.0	5	5	2	5	4	0	06	2	1
3/22	06.5°N	148.0°W	0600	99	06	15	02	1	1010.5	2	0.9	81.6	78.2	81.4	X	X	X	X	X	X	XX	X	X
3/22	08.0°N	149.0°W	1900	99	04	12	03	2	1011.5	1	0.9	81.4	77.8	81.7	6	6	4	X	0	0	04	2	1

Table 6.--Weather observations (USWB 1210-F), Hugh M. Smith cruise 38 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
3/23	08.6°N	149.4°W	0000	99	04	16	02	2	1009.1	6	2.0	81.0	78.0	79.0	8	8	4	X	X	X	05	2	1
3/23	09.1°N	150.1°W	0600	99	07	14	02	2	1009.5	2	1.0	79.2	77.5	78.8	X	X	X	X	X	X	XX	X	X
3/23	10.7°N	150.9°W	1800	99	07	17	02	2	1010.5	1	1.0	80.4	75.9	79.0	6	6	2	X	0	0	05	2	3
3/24	11.7°N	151.6°W	0000	99	08	16	02	2	1009.8	6	2.0	78.8	76.6	79.3	6	2	2	4	4	0	10	2	2
3/24	12.4°N	152.2°W	0600	99	10	16	02	1	1011.2	2	1.2	79.2	76.7	78.0	X	X	X	X	X	X	XX	X	X
3/24	14.2°N	153.2°W	1800	99	07	08	03	1	1012.5	2	1.0	77.1	73.9	77.2	8	8	4	X	X	X	08	2	3
3/25	15.0°N	153.7°W	0100	98	08	19	14	2	1010.8	6	1.4	77.5	73.0	76.9	8	8	5	X	X	X	08	2	2
3/25	15.5°N	154.3°W	0600	98	10	13	60	2	1013.5	2	1.0	75.0	73.5	76.3	8	8	X	X	X	X	XX	X	X
3/25	17.3°N	154.7°W	1800	99	04	16	01	2	1013.2	2	0.7	75.0	70.5	74.5	7	7	4	X	0	0	49	X	2

Table 7.--Weather observations (USWB 1210-F), Charles H. Gilbert cruise 32[1/]

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
1/12	21.3°N	158.1°W	0600	98	10	18	02	1	1018.3	6	1.4	73.8	66.2	75.8	4	X	X	X	X	X	09	X	X
1/12	21.6°N	158.6°W	1800	98	09	21	01	0	1019.0	1	1.5	72.5	65.8	75.7	1	1	X	X	X	1	07	2	5
1/13	21.8°N	157.9°W	0000	98	10	20	03	0	1018.3	6	1.4	73.4	65.8	75.0	3	1	1	5	1	1	09	2	5
1/13	22.0°N	157.7°W	0600	98	10	19	02	0	1019.6	1	1.0	72.0	64.5	74.0	3	2	0	0	0	2	09	2	5
1/13	20.8°N	157.2°W	1800	99	09	01	01	X	1016.3	3	0.2	72.5	64.0	74.3	3	0	0	0	0	1	10	2	1
1/14	20.2°N	156.9°W	0000	99	09	05	03	1	1013.9	7	2.7	73.8	65.4	74.5	4	4	0	7	2	0	09	2	3
1/14	19.4°N	156.3°W	0600	98	09	01	03	1	1013.5	0	0.0	74.6	65.2	74.9	8	X	X	X	X	X	09	2	1
1/14	18.6°N	155.5°W	1200	98	09	21	XX	2	1013.5	2	0.7	72.0	66.3	74.7	8	X	X	X	X	X	12	2	5
1/14	17.8°N	155.4°W	1800	98	08	16	15	2	1012.2	6	0.7	73.0	65.5	75.4	8	8	4	6	X	X	08	2	3
1/15	17.0°N	155.0°W	0000	97	02	10	01	8	XXXXX	7	1.7	75.9	64.2	75.9	6	5	4	6	1	1	02	2	2
1/15	16.3°N	154.6°W	0600	99	10	11	15	2	1011.9	1	0.7	75.3	68.2	75.8	6	5	2	5	0	1	08	2	3
1/15	15.5°N	154.1°W	1200	99	13	11	01	1	1010.5	7	1.4	75.0	70.3	75.8	3	3	4	5	0	0	08	2	2
1/15	14.9°N	153.6°W	1800	98	13	11	03	1	1010.8	1	1.0	76.0	71.9	75.4	7	6	2	6	1	1	11	2	3
1/16	14.3°N	153.0°W	0000	98	09	19	02	2	1009.1	8	2.5	77.2	71.8	75.3	6	1	1	5	2	0	09	2	3
1/16	13.6°N	152.6°W	0600	98	11	16	02	2	1009.5	3	1.4	77.9	74.0	75.9	7	7	4	5	0	0	09	2	3
1/16	12.7°N	152.2°W	1200	97	11	15	02	2	1010.2	8	1.0	77.0	74.1	75.8	6	X	X	X	X	X	10	2	3
1/16	12.0°N	151.9°W	1800	98	10	16	01	2	1010.8	3	1.9	78.0	73.9	76.4	7	6	7	5	3	0	10	2	5
1/17	11.3°N	151.4°W	0000	98	09	13	02	2	1011.2	7	1.7	79.0	74.5	76.9	4	4	8	4	4	0	09	2	5
1/17	10.5°N	151.0°W	0600	98	07	16	02	1	1011.5	2	1.7	78.0	74.6	76.7	3	X	X	X	X	X	09	2	4
1/17	09.7°N	150.8°W	1200	98	07	22	00	1	1010.8	8	1.2	78.9	74.9	78.1	6	X	X	X	X	X	10	2	5
1/17	09.0°N	150.4°W	1800	98	07	21	01	1	1011.9	2	1.4	80.2	75.0	79.2	3	3	4	4	0	0	07	2	5
1/18	08.5°N	150.2°W	0000	98	04	20	03	1	1009.5	6	3.1	81.0	76.4	80.0	7	7	6	4	0	0	06	2	5
1/18	07.6°N	149.5°W	0600	XX	07	13	86	8	1010.2	2	2.0	80.0	76.2	80.0	X	X	X	X	X	X	06	2	5
1/18	07.1°N	149.2°W	1200	90	14	30	82	8	1009.8	0	0.0	77.2	77.0	79.0	X	X	X	X	X	X	07	2	3
1/18	06.4°N	148.6°W	1800	97	12	12	02	8	1010.2	2	0.7	78.7	75.3	79.2	5	5	6	5	0	0	12	2	3
1/19	05.8°N	147.8°W	0000	98	11	11	01	2	1008.1	8	2.5	80.1	76.2	78.7	5	3	2	5	3	8	11	2	5
1/19	05.0°N	147.2°W	0600	98	15	07	01	1	1009.8	2	2.0	80.0	76.2	80.0	X	X	X	X	X	X	11	2	5
1/19	04.4°N	146.9°W	1200	97	15	13	01	2	1008.8	6	1.4	79.3	75.2	79.7	5	X	X	X	X	X	11	2	3
1/19	03.7°N	146.4°W	1800	99	15	15	02	1	1010.5	2	1.9	79.1	71.6	78.3	5	3	4	5	3	1	11	2	3
1/20	03.0°N	145.9°W	0000	99	14	15	02	2	1009.8	7	2.0	79.3	72.2	78.5	6	6	4	5	5	0	11	2	3
1/20	02.5°N	145.6°W	0600	98	12	16	01	1	1010.2	1	1.4	78.1	72.0	78.3	4	X	X	X	X	X	11	2	3
1/20	01.9°N	145.4°W	1200	XX	09	10	00	1	1010.5	8	0.7	76.9	71.3	76.7	1	1	1	5	0	0	11	2	3
1/20	01.0°N	144.9°W	1800	99	11	12	02	0	1012.5	2	2.0	77.5	72.5	76.3	3	3	2	3	0	0	07	2	3
1/21	00.2°N	144.5°W	0000	98	12	12	03	1	1010.8	6	1.7	78.7	72.5	76.7	5	2	4	6	0	1	12	2	3
1/21	00.5°S	144.0°W	0600	99	10	15	02	1	1011.2	1	1.5	77.1	72.7	76.4	1	X	X	X	X	X	09	2	3
1/21	01.2°S	143.7°W	1200	99	10	13	02	0	1011.9	7	1.0	77.0	73.0	77.0	1	X	X	X	X	X	09	2	3
1/21	02.2°S	143.3°W	1800	99	10	15	03	1	1013.2	1	1.4	79.3	74.4	77.8	4	4	2	5	0	0	10	2	3
1/22	02.9°S	142.8°W	0000	99	11	18	01	1	1010.5	8	2.2	79.0	71.8	78.1	4	4	7	5	0	0	09	2	4
1/22	03.7°S	142.5°W	0600	99	09	17	00	X	1011.9	2	1.7	77.5	72.3	78.3	X	X	X	X	X	X	09	2	4
1/22	04.4°S	142.0°W	1200	98	10	14	00	0	1010.5	6	1.4	79.0	72.2	77.5	3	X	X	X	X	X	09	2	4

[1/] All columns in USWB 1210-F are not included here. Those deleted are:

Column	2	Day of week	Column	23	Course of ship
"	3	Octant	"	24	Speed of ship
"	13	Barometer as read	"	31	Diff. sea-air, °F.
"	14	Barometer as corrected	"	32	Dew point, °F.
"	17	Air temperature, °F.			

Table 7.--Weather observations (USWB 1210-F), Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
1/22	05.2°S	141.8°W	1800	99	07	14	01	0	1012.2	1	1.7	78.9	71.7	78.4	1	1	1	5	0	0	08	2	4
1/23	06.0°S	141.5°W	0000	98	08	16	03	1	1010.2	7	2.0	80.0	74.2	78.3	8	8	4	5	X	X	09	2	4
1/23	06.9°S	141.1°W	0600	98	07	13	03	2	1011.9	2	2.0	80.0	72.9	79.0	6	X	X	X	X	X	07	2	3
1/23	07.8°S	140.8°W	1200	99	06	14	00	1	1010.5	6	1.5	79.6	73.6	79.2	2	2	1	5	0	0	07	2	3
1/23	08.8°S	140.5°W	1800	99	05	16	02	0	1012.9	2	2.0	82.5	73.2	80.9	2	2	4	5	0	0	07	2	3
1/25	09.2°S	140.1°W	1800	99	08	16	01	0	1014.2	1	1.4	80.0	71.7	80.7	3	3	1	5	0	0	08	2	4
1/26	09.5°S	140.0°W	0000	99	05	16	03	1	1011.5	7	1.5	82.2	73.2	81.2	6	6	1	5	0	0	07	2	4
1/26	09.5°S	140.1°W	1800	99	09	16	02	1	1013.2	2	1.7	80.9	73.3	80.8	2	2	2	5	0	0	09	2	3
1/27	09.7°S	139.5°W	0000	99	07	12	02	1	1010.2	7	1.7	82.0	74.5	81.7	2	2	2	5	0	0	07	2	2
1/27	09.9°S	139.0°W	1800	98	07	04	03	1	1012.9	1	1.7	82.2	74.3	81.2	5	5	2	5	0	0	07	2	2
1/28	10.4°S	138.7°W	0000	97	05	10	03	1	1013.2	6	1.0	80.3	75.1	81.3	8	8	2	5	X	X	06	2	2
1/28	09.5°S	138.9°W	1800	98	07	04	02	1	1013.2	2	2.0	82.0	74.0	80.8	3	3	4	5	0	0	07	2	2
1/29	09.0°S	139.4°W	0000	98	03	07	02	1	1010.5	7	1.9	84.0	75.9	82.3	4	4	2	5	0	0	04	2	2
1/29	08.8°S	139.3°W	1800	98	07	14	02	1	1012.2	2	1.4	80.3	73.0	80.7	2	2	2	5	0	0	07	2	2
1/30	08.3°S	139.3°W	0000	98	07	13	02	1	1009.5	7	2.0	80.2	75.0	81.6	4	4	2	5	0	0	07	2	3
1/30	08.3°S	139.5°W	0600	XX	10	19	02	X	1010.2	2	2.0	80.0	72.0	81.3	X	X	X	X	X	X	10	2	3
1/30	07.8°S	140.4°W	1800	98	07	14	02	1	1012.9	1	1.7	79.5	73.6	80.2	4	4	1	5	0	0	07	2	4
1/31	08.2°S	140.6°W	0000	98	06	13	02	1	1009.1	6	3.4	81.5	73.1	81.0	3	3	1	5	0	0	07	2	4
1/31	08.7°S	140.1°W	1800	98	05	08	02	1	1012.5	1	1.4	83.4	75.5	80.9	6	5	2	5	4	0	06	2	3
2/2	09.3°S	140.1°W	1800	92	07	12	02	1	1010.8	1	1.4	81.5	74.7	81.3	5	5	2	4	0	0	06	4	3
2/3	09.4°S	140.3°W	0000	98	05	13	02	1	1007.8	6	2.4	82.8	75.3	81.7	2	2	2	4	0	0	06	4	3
2/3	09.5°S	140.1°W	1800	98	21	04	01	0	1010.5	1	1.2	81.0	73.1	81.6	2	2	1	4	4	0	15	2	1
2/4	09.8°S	140.3°W	0000	98	05	10	03	1	1007.8	6	1.7	82.7	74.4	82.2	5	2	4	4	4	9	03	2	3
2/4	09.4°S	139.9°W	1800	98	08	11	02	1	1010.5	1	1.4	82.2	73.8	81.0	3	3	4	4	0	0	08	2	4
2/5	08.9°S	139.9°W	1800	98	11	14	03	1	1011.5	1	1.4	82.6	76.4	81.2	6	5	2	5	0	2	09	3	4
2/6	08.8°S	140.1°W	0000	98	10	17	01	2	1008.5	6	2.0	82.7	74.5	81.1	4	3	2	5	0	2	09	4	4
2/6	08.8°S	140.0°W	1800	98	10	16	02	1	1010.2	3	1.0	81.5	75.4	80.9	2	2	1	5	0	0	12	3	5
2/8	09.0°S	140.2°W	0000	98	07	13	02	1	1006.8	7	1.4	83.0	74.5	81.4	4	4	1	5	0	0	07	2	2
2/9	08.9°S	140.1°W	1800	98	14	10	01	1	1008.8	1	1.2	81.8	73.9	81.1	2	2	1	5	0	0	09	2	4
2/10	09.0°S	140.2°W	1200	98	27	05	02	0	1007.5	6	1.2	81.2	74.6	80.7	1	1	1	5	0	0	XX	3	3
2/10	09.7°S	140.9°W	1800	98	09	07	02	0	1010.5	2	2.4	84.5	75.5	81.8	2	2	4	5	0	0	09	2	2
2/11	10.1°S	141.6°W	0000	99	04	06	01	0	1008.1	7	1.5	83.1	75.2	82.0	2	2	1	5	0	0	13	2	2
2/11	10.8°S	142.3°W	0600	98	03	06	02	0	1010.2	2	2.0	83.0	75.0	81.8	2	2	1	5	0	0	13	2	3
2/11	11.2°S	142.9°W	1200	99	07	09	02	1	1007.5	6	1.4	81.2	73.8	80.9	4	X	X	X	X	X	13	2	3
2/11	11.9°S	143.5°W	1800	99	06	06	02	1	1010.8	2	2.0	84.5	75.0	82.5	3	3	4	5	0	0	13	2	3
2/12	12.5°S	144.2°W	0000	99	07	05	02	1	1008.8	7	1.0	84.9	74.8	84.3	5	5	1	5	0	0	11	4	3
2/12	13.0°S	145.0°W	0600	99	10	06	01	1	1009.8	2	1.4	84.5	74.5	84.2	1	1	1	5	0	0	13	4	3
2/12	13.5°S	145.5°W	1200	99	15	06	02	0	1008.5	7	1.5	82.8	74.5	82.8	1	1	1	5	0	0	11	4	3
2/12	14.3°S	146.1°W	1800	99	04	07	02	0	1010.2	2	1.4	84.2	74.5	83.5	1	1	1	5	0	0	11	4	3
2/13	14.7°S	146.3°W	0000	99	02	09	01	0	1007.5	6	1.2	85.0	75.5	84.8	2	2	2	5	0	5	09	2	2
2/13	15.0°S	146.7°W	0600	98	00	06	02	0	1010.5	2	2.0	82.5	75.0	82.0	2	2	4	5	0	0	00	2	2
2/13	15.7°S	146.6°W	1800	98	13	02	02	0	1011.2	2	1.0	82.5	74.0	83.0	1	1	2	5	0	0	00	2	0
2/14	16.2°S	146.9°W	0000	99	23	01	15	1	1009.5	6	1.9	85.7	76.3	86.4	5	3	3	5	8	1	20	7	5
2/14	16.4°S	147.8°W	0600	98	06	04	15	1	1010.8	2	1.4	83.0	75.5	83.7	4	4	3	5	8	1	18	7	5
2/14	16.9°S	148.6°W	1200	98	09	11	15	2	1009.1	8	2.0	82.2	76.0	83.3	7	3	2	5	3	1	13	5	3

Table 7.--Weather observations (USWB 1210-F), Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
2/20	15.3°S	147.1°W	0000	99	06	06	01	1	1010.5	7	1.4	83.6	76.8	84.2	1	1	1	5	0	0	06	2	2
2/20	14.9°S	146.3°W	0600	99	07	09	00	X	1011.2	2	1.0	84.3	76.5	84.0	X	X	X	X	X	X	07	2	2
2/20	14.4°S	145.6°W	1200	99	13	08	16	1	1010.2	7	1.4	82.9	76.9	83.5	6	6	3	5	X	X	XX	X	2
2/20	13.9°S	145.0°W	1800	99	08	09	01	1	1012.5	2	2.4	83.8	76.0	84.2	4	4	3	5	0	0	08	2	2
2/21	13.3°S	144.5°W	0000	98	07	08	15	2	1010.2	7	1.7	83.0	75.1	84.7	7	6	3	5	4	1	10	2	2
2/21	12.7°S	143.9°W	0600	98	05	06	00	X	1011.2	2	1.4	80.0	80.0	83.8	9	X	X	X	X	X	05	2	2
2/21	12.2°S	143.4°W	1200	98	06	10	15	2	1010.5	8	1.4	80.6	74.3	82.9	8	X	X	X	X	X	XX	X	2
2/21	11.7°S	142.6°W	1800	98	07	10	01	1	1014.2	2	2.0	83.2	75.5	82.5	4	4	3	5	0	0	07	2	2
2/22	11.1°S	142.1°W	0000	98	10	16	15	2	1011.9	6	1.4	81.8	74.8	82.6	7	3	7	5	4	6	07	2	4
2/22	10.6°S	141.5°W	0600	98	10	11	00	X	1012.9	2	1.4	83.0	75.0	82.2	9	X	X	X	X	X	10	2	2
2/22	10.1°S	141.1°W	1200	98	12	13	15	1	1010.5	6	1.7	81.8	75.0	82.1	2	X	X	X	X	X	XX	2	4
2/22	09.5°S	140.6°W	1800	99	13	11	01	0	1012.9	2	2.0	82.0	75.5	81.8	1	1	2	5	0	0	13	2	2
2/23	09.3°S	140.1°W	1800	98	12	12	03	1	1013.9	2	2.0	81.9	75.1	81.6	5	5	3	5	0	0	12	2	2
2/24	09.4°S	139.9°W	0000	98	06	12	01	1	1011.5	6	1.4	82.2	74.2	82.1	2	2	1	5	0	0	08	2	3
2/24	09.5°S	139.8°W	1800	98	06	06	01	0	1015.2	2	2.0	82.3	75.0	81.8	1	1	1	5	0	0	06	2	2
2/25	09.8°S	139.4°W	0000	99	07	05	03	1	1012.2	6	2.2	82.0	75.1	83.1	6	6	1	5	0	0	07	2	3
2/26	10.3°S	139.9°W	0000	99	06	07	03	1	1010.8	6	2.2	82.7	74.9	84.4	4	4	2	5	0	1	06	2	3
2/26	10.3°S	138.7°W	1800	99	06	05	01	1	1013.5	2	1.5	83.2	74.8	82.0	1	1	1	5	0	0	18	3	2
2/27	09.7°S	138.8°W	0000	98	33	05	02	0	1009.8	6	2.0	83.0	75.1	84.6	1	1	1	5	0	0	10	4	2
2/28	09.3°S	139.6°W	0600	98	06	07	XX	X	1012.2	2	2.0	83.5	74.5	82.8	X	X	X	X	X	X	XX	X	X
3/1	08.4°S	140.6°W	0000	98	06	08	03	2	1010.5	6	1.7	83.3	76.1	83.5	6	6	2	5	0	0	05	4	2
3/1	07.8°S	140.4°W	1800	98	12	10	02	1	1012.9	1	1.4	83.0	75.8	81.8	3	3	2	5	0	0	35	4	2
3/3	09.0°S	139.9°W	0600	98	00	15	00	X	1012.5	2	1.4	83.0	75.5	82.5	9	X	X	X	X	X	00	2	2
3/3	08.7°S	139.9°W	1800	98	00	11	03	2	1013.2	2	1.7	82.0	75.0	81.5	7	7	2	5	3	0	00	2	2
3/4	09.0°S	140.1°W	0000	98	31	07	03	2	1010.2	6	1.7	84.5	74.5	82.3	8	8	2	5	6	X	31	2	2
3/4	09.0°S	140.1°W	1800	98	09	04	01	1	1012.5	2	1.7	83.3	75.0	82.7	3	3	2	5	0	0	09	2	2
3/5	08.8°S	140.5°W	0000	98	05	08	02	0	1009.5	6	1.9	82.8	75.0	83.1	2	2	2	5	0	1	04	2	2
3/5	08.8°S	140.2°W	1800	98	05	12	03	1	1011.2	3	0.7	82.0	76.0	82.1	6	6	4	5	0	0	08	2	3
3/6	08.8°S	140.4°W	0000	98	06	15	02	1	1008.8	7	2.0	82.5	75.0	82.6	4	4	2	5	0	0	06	2	3
3/6	09.2°S	139.8°W	1800	98	10	14	02	1	1012.5	X	XX	82.6	75.5	82.5	4	3	1	5	0	1	09	2	4
3/7	09.7°S	139.4°W	0000	98	08	16	02	1	1010.2	9	2.0	82.9	75.9	82.7	4	4	2	5	6	0	08	2	4
3/7	09.8°S	139.2°W	1800	98	04	04	02	1	1012.9	2	1.4	83.0	76.0	83.0	3	3	2	5	0	0	04	2	2
3/8	09.3°S	139.7°W	0000	98	05	11	01	0	1009.8	7	2.2	84.7	77.3	83.9	2	2	1	5	0	1	04	2	2
3/8	09.0°S	140.2°W	1800	98	09	12	15	2	1012.5	3	1.2	82.8	77.2	83.0	6	5	3	5	0	1	02	2	3
3/8	09.2°S	140.2°W	2300	98	11	10	02	1	1009.8	7	1.7	84.8	78.0	83.8	5	5	3	5	0	1	11	2	2
3/13	08.6°S	140.2°W	0000	98	07	11	02	1	1010.2	7	1.9	83.3	76.3	83.3	1	1	1	5	0	0	07	4	3
3/13	07.9°S	140.8°W	0600	98	09	12	02	0	1011.9	2	1.7	83.8	77.0	81.5	1	1	2	5	0	0	09	2	3
3/13	07.1°S	141.2°W	1200	98	09	11	02	0	1010.5	6	1.5	81.5	76.1	81.5	1	1	2	5	0	0	05	2	3
3/13	06.3°S	141.7°W	1800	98	10	12	02	0	1012.5	2	1.4	83.6	76.8	81.2	2	2	2	5	0	0	10	2	2
3/14	05.6°S	142.0°W	0000	98	09	11	03	1	1008.5	7	2.4	82.8	77.2	82.2	5	5	2	5	0	0	09	4	3
3/14	04.8°S	142.5°W	0600	98	13	10	02	1	1010.5	2	2.0	83.0	77.3	80.8	2	2	2	5	0	0	09	4	3
3/14	04.0°S	142.9°W	1200	98	12	09	01	0	1009.8	8	1.4	81.0	76.2	80.9	1	1	1	5	0	0	12	3	3
3/14	03.3°S	143.3°W	1800	98	09	08	02	1	1011.5	2	1.4	82.0	76.8	81.1	4	4	2	5	0	0	11	3	3
3/15	02.5°S	143.7°W	0000	98	05	09	02	1	1008.1	8	3.2	82.2	76.6	81.7	6	6	2	5	0	0	05	5	3
3/15	01.9°S	144.1°W	0600	98	07	10	02	1	1009.5	2	2.0	82.3	76.0	80.5	2	2	2	5	0	0	09	3	2

Table 7.--Weather observations (USWB 1210-F), Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
3/15	01.1°S	144.6°W	1200	99	07	07	00	1	1009.5	7	1.4	79.3	75.0	79.1	4	4	2	5	0	0	XX	X	2
3/15	00.4°S	144.9°W	1800	99	08	08	02	1	1012.2	2	2.0	82.3	76.0	79.5	2	2	2	5	0	0	02	3	2
3/16	00.3°N	145.3°W	0000	99	09	05	01	1	1009.1	7	2.4	82.0	75.0	83.5	4	4	1	5	0	0	03	2	3
3/16	01.0°N	145.9°W	0600	99	00	00	15	1	1010.8	2	1.7	82.0	74.8	81.6	3	3	2	5	0	0	06	2	3
3/16	02.1°N	146.2°W	1200	99	00	00	02	0	1010.2	7	1.5	81.0	74.3	81.1	1	1	2	5	0	0	03	2	3
3/16	02.8°N	146.7°W	1800	99	28	06	02	0	1013.2	2	2.0	81.8	75.6	80.0	2	2	2	5	0	0	00	2	2
3/17	03.6°N	147.1°W	0000	99	33	02	15	1	1011.2	8	2.2	83.0	75.9	84.7	4	3	2	5	4	0	01	2	3
3/17	04.4°N	147.4°W	0600	98	07	12	03	1	1012.9	2	1.7	80.0	75.5	80.0	5	5	4	4	0	0	03	2	3
3/17	05.2°N	147.8°W	1200	98	09	15	01	2	1011.5	8	2.0	79.1	75.0	80.1	7	2	2	5	3	0	03	2	3
3/17	06.1°N	148.2°W	1800	98	20	07	01	1	1013.2	2	1.7	82.8	76.2	80.5	2	2	2	5	0	0	06	2	3
3/18	06.7°N	148.6°W	0000	99	00	00	01	0	1010.2	7	2.4	82.8	75.7	83.7	1	0	0	9	0	2	05	2	4
3/18	07.5°N	148.7°W	0600	99	08	07	01	0	1012.2	2	2.0	82.8	75.3	81.8	1	1	4	4	0	0	05	2	4
3/18	08.0°N	149.3°W	1200	98	09	10	15	1	1010.5	8	2.2	80.4	75.7	80.0	7	7	2	5	0	0	04	2	4
3/18	08.8°N	149.8°W	1800	98	04	18	02	2	1011.9	2	1.7	78.0	74.8	78.0	7	7	4	5	0	0	05	2	4
3/19	09.3°N	150.4°W	0000	98	06	16	02	2	1010.2	6	2.0	79.2	74.8	79.1	7	6	7	5	4	0	06	2	6
3/19	10.0°N	150.7°W	0600	98	07	17	01	1	1011.2	2	2.0	79.0	74.5	78.1	1	1	7	5	0	0	06	2	6
3/19	10.8°N	151.2°W	1200	XX	05	17	60	6	1010.8	7	1.5	75.9	72.7	78.0	7	X	X	X	X	X	XX	2	6
3/19	11.4°N	151.7°W	1800	98	04	14	01	1	1012.9	2	2.0	77.5	74.5	77.3	3	3	2	5	0	0	05	2	6
3/20	12.2°N	152.1°W	0000	98	04	13	15	1	1011.9	8	1.7	77.3	73.0	78.1	7	6	7	5	0	1	03	2	6
3/20	12.9°N	152.5°W	0600	98	05	14	01	1	1012.9	2	1.7	77.8	72.6	76.9	3	3	4	5	0	0	03	2	4
3/20	13.5°N	152.9°W	1200	XX	07	14	00	1	1012.9	8	1.4	75.5	71.0	76.3	6	6	2	5	0	0	04	2	5
3/20	14.2°N	153.2°W	1800	98	06	14	03	2	1013.5	2	1.7	76.0	70.3	75.3	6	6	2	5	0	0	04	2	4
3/21	15.1°N	153.6°W	0000	99	07	10	02	1	1013.2	8	1.4	76.9	70.4	76.8	5	5	1	5	0	0	04	2	3
3/21	15.8°N	154.3°W	0600	98	05	10	01	1	1014.2	2	2.0	76.0	68.8	75.5	0	0	0	9	0	0	04	2	2
3/21	16.5°N	154.8°W	1200	99	08	06	02	0	1015.2	8	0.5	74.0	66.9	75.0	1	1	1	5	0	0	04	2	3
3/21	17.3°N	155.3°W	1800	99	03	03	02	0	1015.9	2	1.4	74.0	67.0	74.1	1	1	1	5	0	0	04	2	3
3/22	18.0°N	155.8°W	0000	99	15	06	02	0	1013.9	8	1.9	76.0	67.2	75.2	1	1	1	5	0	0	09	6	3
3/22	18.8°N	156.3°W	0600	99	00	00	02	0	1014.6	2	0.7	74.3	65.2	75.0	1	1	1	5	0	0	09	4	2
3/22	19.5°N	156.7°W	1200	99	17	05	02	0	1013.9	8	0.9	73.3	67.2	74.6	1	1	1	5	0	0	XX	X	0
3/22	20.4°N	157.3°W	1800	98	36	13	15	1	1013.5	3	0.7	73.3	66.2	73.8	8	8	6	4	X	X	33	2	2
3/23	20.9°N	157.7°W	0000	98	32	06	02	2	1013.2	8	1.2	72.0	63.5	74.0	8	2	1	5	7	3	35	2	2

Table 8.--Weather observations (USWB 1210-F), John R. Manning cruise 34[1/]

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
1/6	18.4°N	155.0°W	1800	98	08	24	02	1	1017.6	2	1.7	74.5	71.0	75.5	3	3	2	5	0	0	08	2	3
1/7	18.1°N	154.4°W	0000	98	08	24	03	2	1015.6	7	2.0	77.5	73.2	75.5	8	8	4	5	X	X	08	2	3
1/7	17.8°N	153.9°W	0600	98	08	25	01	1	1016.6	3	1.0	74.5	69.5	76.0	5	5	2	5	0	0	08	2	3
1/7	17.5°N	153.5°W	1200	98	08	26	03	1	1016.9	8	0.2	75.0	71.0	75.5	7	7	2	5	0	0	08	2	4
1/7	17.3°N	153.1°W	1800	98	08	24	03	2	1020.3	1	1.7	70.4	65.0	76.0	7	5	8	5	6	0	08	2	4
1/8	17.1°N	152.6°W	0000	98	05	24	02	2	1015.6	7	1.4	74.6	69.5	76.0	7	7	2	5	0	0	06	2	4
1/8	16.8°N	152.1°W	0600	98	05	23	02	2	1016.3	2	0.2	73.0	68.5	75.9	6	6	2	5	0	0	06	2	4
1/8	16.4°N	151.5°W	1200	98	06	22	01	1	1015.2	8	0.3	72.0	66.6	75.0	3	3	2	5	0	0	06	2	4
1/8	16.1°N	151.1°W	1800	98	06	24	01	0	1016.9	2	0.5	73.0	67.5	75.2	3	3	2	5	0	0	06	2	4
1/9	15.8°N	150.6°W	0000	98	06	23	01	0	1013.2	7	1.1	76.2	69.1	75.3	2	2	2	5	0	0	06	2	4
1/9	15.5°N	150.1°W	0600	98	06	25	03	1	1014.9	3	0.5	73.2	67.8	75.7	6	6	4	4	0	0	06	2	3
1/9	15.1°N	149.6°W	1200	98	06	26	01	1	1012.9	8	0.7	74.0	68.0	76.0	2	2	4	5	0	0	06	2	3
1/9	14.8°N	149.0°W	1800	98	05	20	03	1	1014.2	2	0.4	73.3	68.5	76.4	7	7	4	5	0	0	06	2	3
1/10	14.5°N	148.3°W	0000	98	05	18	15	2	1011.9	8	0.7	75.6	69.0	76.3	8	8	4	5	X	X	05	2	3
1/10	14.3°N	147.8°W	0600	98	05	19	02	2	1012.5	1	0.2	74.0	68.5	76.5	8	8	4	5	X	X	05	2	3
1/10	14.0°N	147.3°W	1200	98	08	19	02	2	1011.5	6	0.2	73.5	70.0	76.4	8	8	4	5	X	X	08	2	3
1/10	13.8°N	146.7°W	1800	98	09	15	20	2	1013.9	2	2.5	72.9	69.0	77.0	8	8	4	5	X	X	09	3	3
1/11	13.5°N	146.2°W	0000	98	09	11	02	2	1010.8	8	1.7	75.1	70.6	76.9	8	8	4	5	X	X	09	3	3
1/11	13.1°N	145.6°W	0600	97	12	16	50	8	1013.9	2	1.7	75.5	67.5	76.5	8	8	4	4	X	X	10	3	3
1/11	12.8°N	145.1°W	1200	97	12	14	02	6	1012.2	6	1.7	75.8	71.1	75.2	8	8	4	4	X	X	10	3	3
1/11	12.5°N	144.5°W	1800	96	04	29	51	6	1016.3	2	3.4	72.1	69.2	76.2	8	8	4	4	X	X	05	3	3
1/12	12.2°N	144.0°W	0000	98	05	22	50	6	1012.5	5	1.7	73.0	68.7	76.3	8	8	4	4	X	X	05	3	3
1/12	11.8°N	143.5°W	0600	98	05	19	01	2	1013.9	1	1.7	75.5	70.5	76.3	7	7	4	5	X	X	05	3	3
1/12	11.4°N	142.8°W	1200	98	01	09	02	1	1012.2	4	0.0	74.1	70.0	76.3	3	3	1	5	0	0	01	3	3
1/12	11.0°N	142.1°W	1800	98	02	17	02	0	1014.6	2	2.5	76.0	70.5	76.2	4	2	2	5	6	0	02	3	3
1/13	10.7°N	141.5°W	0000	98	03	17	02	0	1010.8	6	3.4	75.3	70.9	77.0	4	4	2	5	0	0	04	4	3
1/13	10.2°N	141.0°W	0600	98	06	14	03	1	1013.2	1	3.4	76.3	71.3	76.9	8	2	4	4	1	X	06	4	3
1/13	09.8°N	140.4°W	1200	98	06	10	15	2	1010.5	7	2.0	75.0	71.5	76.2	7	7	4	5	X	X	06	4	2
1/13	09.4°N	139.8°W	1800	98	03	15	02	2	1012.5	2	1.7	75.5	72.2	76.3	7	4	2	5	6	X	03	4	2
1/14	08.9°N	139.2°W	0000	98	04	17	01	1	1008.5	6	3.4	76.9	73.1	77.5	4	3	2	5	5	0	04	4	3
1/14	08.6°N	138.6°W	0600	98	04	14	03	2	1011.2	2	2.5	77.3	73.9	77.1	7	2	2	5	5	X	04	3	2
1/14	08.0°N	137.9°W	1200	98	06	16	01	1	1008.1	6	1.4	77.3	74.8	79.0	4	4	2	5	0	0	06	3	2
1/14	07.7°N	137.1°W	1800	98	06	16	01	0	1011.2	1	1.7	80.0	73.5	79.7	2	2	2	5	0	0	08	3	3
1/15	07.3°N	136.4°W	0000	98	06	15	02	0	1006.8	6	3.2	81.2	74.9	81.0	2	2	2	5	0	0	06	3	3
1/15	06.8°N	135.7°W	0600	98	05	12	02	0	1009.8	1	1.7	80.0	74.2	79.7	3	3	2	5	0	0	07	3	3
1/15	06.3°N	135.0°W	1200	98	06	12	02	0	1007.8	7	1.7	79.0	74.0	79.5	2	1	2	5	4	0	05	4	2
1/15	05.9°N	134.5°W	1800	98	06	10	15	1	1010.5	1	2.5	79.7	75.5	79.0	4	2	2	5	5	0	06	3	2
1/16	05.4°N	133.9°W	0000	98	10	09	15	1	1007.1	7	2.5	79.1	74.6	80.7	4	2	2	5	7	0	10	3	2
1/16	05.0°N	132.3°W	0600	98	11	08	03	0	1010.2	2	2.5	79.5	75.5	80.0	3	2	2	5	4	0	11	4	2
1/16	04.6°N	132.7°W	1200	98	13	08	02	1	1007.5	6	2.4	78.4	74.2	78.6	6	3	2	5	6	0	13	4	2

[1/] All columns in USWB 1210-F are not included here. Those deleted are:

Column	2	Day of week	Column	23	Course of ship
"	3	Octant	"	24	Speed of ship
"	13	Barometer as read	"	31	Diff. sea-air, °F.
"	14	Barometer as corrected	"	32	Dew point, °F.
"	17	Air temperature, °F.			

Table 8.--Weather observations (USWB 1210-F), John R. Manning cruise 34 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
1/16	04.4°N	132.3°W	1800	98	11	20	15	8	1011.2	1	3.1	80.0	75.3	79.2	3	2	2	5	4	0	11	3	2
1/17	04.1°N	132.2°W	0600	97	13	12	20	2	1010.2	1	1.7	77.5	74.9	79.5	8	8	3	4	X	X	13	3	4
1/17	03.5°N	132.2°W	1800	97	13	12	50	2	1011.5	1	3.4	78.0	74.2	76.3	7	7	4	4	0	0	13	3	2
1/18	03.5°N	132.1°W	0000	98	12	15	02	1	1007.5	7	3.4	78.2	73.4	76.7	6	6	6	5	0	0	13	3	2
1/18	03.0°N	132.1°W	0600	98	18	08	01	1	1011.2	1	1.7	76.5	72.5	76.1	1	0	0	6	1	0	14	3	2
1/18	02.4°N	132.2°W	1200	98	15	09	01	0	1008.8	7	1.7	75.3	71.5	75.7	1	1	5	5	0	0	16	3	2
1/18	01.8°N	132.3°W	1800	98	13	12	02	0	1010.5	1	1.2	78.2	72.5	75.8	1	0	0	6	8	0	16	3	2
1/19	01.8°N	132.5°W	0000	98	13	06	02	0	1008.5	6	2.5	77.0	71.7	77.0	1	1	4	5	0	0	13	3	2
1/19	01.8°N	132.6°W	0600	98	12	13	03	1	1010.5	2	2.5	77.2	72.8	76.0	7	7	4	5	X	X	12	2	2
1/19	01.5°N	132.1°W	1200	98	12	14	02	2	1008.1	3	1.7	76.5	72.3	75.9	7	3	2	5	1	X	12	2	2
1/19	01.5°N	132.0°W	1800	98	12	10	03	1	1011.2	1	2.5	77.8	73.1	76.1	6	6	2	5	0	0	12	3	2
1/20	01.4°N	132.2°W	0000	98	13	12	15	1	1008.1	6	1.7	79.0	74.0	76.9	6	4	2	4	2	0	13	3	2
1/20	00.8°N	132.1°W	0600	98	14	09	01	1	1012.2	1	2.5	77.4	73.0	76.0	1	1	1	5	0	0	14	3	2
1/20	00.0°	132.3°W	1800	98	12	14	01	1	1012.9	1	1.7	76.1	73.0	75.8	2	1	2	5	1	0	12	3	2
1/21	00.3°S	132.3°W	0000	98	12	13	03	1	1009.5	7	1.7	77.1	72.3	76.5	6	5	2	5	1	0	12	2	2
1/21	01.0°S	132.2°W	0600	98	13	14	01	1	1011.2	2	1.7	76.3	72.0	75.9	1	1	8	5	1	0	12	2	2
1/21	01.9°S	132.0°W	1800	98	10	12	01	0	1013.5	1	1.7	77.9	72.9	75.5	1	1	8	5	0	0	10	3	2
1/22	02.0°S	132.0°W	0000	98	10	08	02	0	1010.5	6	1.7	76.1	72.2	76.9	3	3	2	5	0	0	10	3	2
1/22	02.6°S	132.0°W	0600	98	10	13	02	0	1012.2	2	1.5	76.8	72.1	76.8	1	1	2	5	0	0	10	2	2
1/22	03.5°S	132.0°W	1800	98	07	18	02	0	1013.2	2	1.7	78.9	72.2	77.5	1	1	2	5	0	0	08	2	2
1/23	03.5°S	132.0°W	0000	98	07	10	03	0	1010.2	7	1.5	79.5	73.3	78.3	4	4	2	5	0	0	07	2	2
1/23	03.8°S	132.0°W	0600	98	09	15	01	0	1012.2	2	1.5	77.6	72.4	77.6	2	2	2	5	0	0	09	2	2
1/23	04.9°S	132.0°W	1800	98	09	14	03	0	1013.5	1	1.5	79.5	73.0	77.6	4	4	2	5	0	0	09	2	3
1/24	04.7°S	132.1°W	0000	98	09	11	03	1	1010.2	6	2.5	78.2	73.2	78.6	4	4	2	4	0	0	09	2	2
1/24	05.5°S	132.0°W	0600	98	08	17	00	1	1012.5	1	1.7	78.5	72.0	77.8	0	0	0	9	0	0	08	2	3
1/24	06.5°S	132.0°W	1800	98	09	17	03	1	1014.6	0	1.4	79.5	73.7	78.1	5	5	2	5	0	0	09	2	2
1/25	06.4°S	132.1°W	0000	98	10	16	02	2	1010.2	7	1.7	81.0	74.0	79.1	4	4	2	5	0	0	10	2	3
1/25	07.1°S	132.0°W	0600	98	11	15	01	1	1013.9	2	1.7	78.9	74.0	78.9	2	2	2	5	0	0	12	2	2
1/25	07.8°S	132.0°W	1800	98	12	15	01	1	1014.9	1	1.7	79.0	72.6	78.8	1	1	2	5	0	0	12	2	3
1/26	07.9°S	131.9°W	0000	98	11	14	02	1	1010.5	6	2.5	82.1	75.1	79.6	4	4	2	5	0	0	11	2	3
1/26	08.6°S	131.9°W	0600	98	12	15	01	1	1013.2	1	1.7	79.1	74.0	79.5	1	1	2	5	0	0	12	2	3
1/26	09.5°S	132.0°W	1800	98	07	16	02	0	1013.9	0	0.9	80.1	74.2	80.1	3	3	2	5	0	0	07	2	2
1/27	09.7°S	131.9°W	0000	98	05	09	02	0	1009.5	7	3.4	80.3	74.3	80.9	2	2	2	5	0	0	06	2	2
1/27	10.2°S	131.8°W	0600	98	09	12	02	0	1011.9	1	2.0	79.4	73.7	80.1	2	2	2	5	0	0	09	2	2
1/27	11.0°S	132.1°W	1800	98	08	09	03	0	1013.2	1	1.7	80.9	76.1	80.8	4	4	2	5	0	0	10	2	2
1/28	11.0°S	132.0°W	0000	98	07	08	03	0	1010.2	6	1.7	80.2	73.1	82.0	4	3	2	5	6	0	07	2	2
1/28	11.7°S	132.0°W	0600	98	09	08	01	6	1012.9	2	2.0	79.4	73.0	81.2	2	2	4	5	0	0	09	2	2
1/28	12.5°S	132.0°W	1800	98	06	12	03	1	1013.9	2	1.4	82.3	76.0	81.7	6	6	2	5	0	0	06	2	2
1/29	12.5°S	132.0°W	0000	98	06	09	01	1	1011.2	7	2.5	82.8	76.3	82.4	3	2	2	5	6	0	06	2	2
1/29	13.1°S	131.9°W	0600	98	09	09	02	0	1013.9	X	XX	80.5	75.0	81.6	2	2	X	X	X	X	09	2	2
1/29	14.1°S	132.0°W	1800	98	09	06	15	0	1013.9	1	1.2	82.0	76.5	81.8	3	2	2	5	2	0	09	2	1
1/30	14.1°S	132.0°W	0000	98	09	10	03	1	1010.5	6	1.7	82.1	77.2	82.6	6	4	2	5	2	0	09	2	2
1/30	13.9°S	132.3°W	0600	98	09	10	13	2	1013.9	1	1.5	82.0	78.0	82.0	4	1	2	5	2	0	09	2	2
1/30	13.5°S	133.1°W	1200	98	08	11	13	2	1010.2	8	2.5	81.6	78.9	81.5	4	2	2	5	2	0	08	2	2
1/30	13.1°S	133.9°W	1800	98	07	12	03	2	1012.9	1	1.7	84.0	77.5	82.1	6	2	2	5	1	0	07	2	2

Table 8.--Weather observations (USWB 1210-F), John R. Manning cruise 34 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
1/31	12.7°S	134.6°W	0000	98	06	10	15	2	1010.2	6	1.5	86.5	78.8	83.0	7	3	2	5	1	0	06	2	1
1/31	12.5°S	135.3°W	0600	98	02	10	13	6	1012.2	5	0.5	79.0	71.0	81.6	8	X	2	X	2	X	06	2	2
1/31	12.1°S	136.0°W	1200	98	06	14	01	2	1010.2	6	3.1	79.6	75.1	81.6	5	2	2	5	2	X	06	2	2
1/31	11.8°S	136.8°W	1800	98	04	12	15	2	1013.2	1	1.7	82.0	77.4	81.6	8	4	2	5	2	X	04	2	2
2/1	11.4°S	137.6°W	0000	98	06	16	03	2	1010.2	6	2.2	81.8	75.7	81.7	5	2	2	5	6	0	06	2	2
2/1	11.0°S	138.1°W	0600	98	08	12	01	1	1012.2	2	1.4	81.2	74.6	81.4	2	2	2	5	0	0	07	2	2
2/1	10.9°S	138.5°W	1800	98	08	11	01	0	1011.5	1	0.9	82.0	74.9	81.3	2	2	2	5	0	0	08	2	2
2/2	10.8°S	138.5°W	0000	98	08	10	02	0	1008.5	7	2.5	81.6	73.9	81.8	2	2	2	5	0	0	08	2	2
2/2	10.3°S	138.5°W	0600	98	08	07	01	1	1010.5	1	1.0	80.5	77.0	81.5	1	1	1	5	0	0	08	2	2
2/2	09.5°S	138.6°W	1800	98	06	08	03	0	1010.8	1	1.7	82.0	74.0	81.4	3	3	2	5	1	0	06	2	2
2/3	09.5°S	138.5°W	0000	98	06	07	02	0	1008.1	7	2.5	81.1	75.2	82.7	3	3	2	5	0	0	06	2	1
2/3	09.1°S	138.4°W	0600	98	06	14	01	1	1009.5	1	1.7	80.5	74.5	81.0	0	0	0	9	0	0	06	2	1
2/3	08.5°S	138.5°W	1800	98	05	09	03	0	1010.5	1	1.7	80.5	74.2	81.0	3	3	2	5	6	0	05	2	2
2/4	08.5°S	138.5°W	0000	98	06	10	03	1	1007.1	7	2.0	79.8	75.0	81.6	7	3	2	5	4	0	06	2	2
2/4	08.0°S	138.4°W	0600	98	09	13	01	1	1009.1	2	1.7	80.5	74.9	80.5	3	2	2	5	5	X	08	2	2
2/4	07.5°S	138.6°W	1800	98	08	16	01	1	1010.5	1	1.0	81.0	74.5	80.2	2	1	2	5	4	0	08	2	2
2/5	07.6°S	138.5°W	0000	98	09	14	03	1	1007.5	6	2.2	79.6	74.9	80.5	6	3	2	4	9	0	09	2	3
2/5	07.6°S	139.0°W	0600	98	08	14	01	1	1010.2	2	1.7	80.5	75.3	80.3	2	2	2	5	0	0	08	2	3
2/5	07.5°S	139.6°W	1800	98	09	18	03	1	1010.5	1	1.5	81.5	75.0	80.7	4	4	2	5	0	0	09	2	4
2/6	07.6°S	139.5°W	0000	98	09	19	01	1	1007.8	7	2.0	81.9	75.6	81.0	3	3	2	5	0	0	09	2	4
2/6	08.1°S	139.4°W	0600	98	09	19	01	1	1009.8	1	1.7	80.3	76.0	80.6	2	2	2	5	0	0	09	2	4
2/6	08.5°S	139.5°W	1800	98	09	17	03	1	1009.8	4	0.0	81.0	76.0	80.7	6	6	2	5	0	0	09	2	4
2/7	08.5°S	139.5°W	0000	98	09	13	03	2	1007.1	7	1.7	81.5	76.4	81.2	5	5	2	5	0	0	09	2	4
2/7	09.0°S	139.4°W	0600	98	09	13	01	1	1008.5	2	0.9	81.0	77.0	81.2	3	3	2	5	0	0	09	2	3
2/7	09.5°S	139.6°W	1800	98	06	14	03	1	1009.1	2	1.7	81.6	75.8	81.4	5	5	2	5	0	0	06	2	3
2/8	09.5°S	139.6°W	0000	98	08	12	01	1	1006.8	7	1.9	82.6	75.8	81.7	2	1	2	5	6	0	07	2	2
2/8	10.0°S	139.5°W	0600	98	10	15	02	0	1008.5	1	1.7	81.2	76.5	81.5	1	1	2	5	0	0	10	2	2
2/8	10.4°S	139.6°W	1800	98	07	18	03	0	1009.5	1	1.2	82.0	75.3	81.5	3	3	2	5	0	0	09	2	2
2/9	10.4°S	139.5°W	0000	98	07	14	01	0	1006.4	7	2.0	81.8	76.0	81.9	1	1	2	5	0	0	07	2	2
2/9	10.0°S	139.9°W	0600	98	09	12	02	0	1008.8	2	1.4	82.0	77.5	81.6	1	1	2	5	1	0	09	2	2
2/9	09.3°S	140.6°W	1800	98	11	12	03	0	1008.5	2	1.4	81.4	75.0	81.2	2	2	2	5	0	0	09	2	3
2/10	08.4°S	140.6°W	1800	98	08	11	15	0	1010.2	2	2.0	81.4	74.8	80.9	3	3	3	4	0	0	08	2	2
2/11	08.5°S	140.5°W	0000	98	07	12	15	1	1007.5	7	2.0	82.0	75.0	81.5	6	4	3	4	6	0	07	2	2
2/11	08.9°S	140.8°W	0600	98	12	02	03	1	1009.8	2	2.4	81.2	75.1	81.4	4	2	2	5	1	0	12	2	1
2/11	09.5°S	141.4°W	1200	98	10	08	01	0	1007.8	6	1.9	80.6	74.7	81.4	1	1	2	5	0	0	10	2	1
2/11	10.1°S	141.9°W	1800	98	10	14	15	1	1010.8	2	1.7	81.5	75.1	81.9	6	3	2	4	5	0	10	3	1
2/12	10.6°S	142.6°W	0000	98	03	07	01	1	1007.5	7	1.5	83.0	75.3	83.2	2	2	5	2	0	0	04	2	1
2/12	11.2°S	143.3°W	0600	98	17	05	03	1	1009.5	2	2.0	79.5	72.5	82.7	4	2	5	2	4	0	XX	X	X
2/12	11.7°S	143.9°W	1200	98	09	13	01	1	1007.8	6	1.7	81.5	73.5	82.3	2	2	2	4	0	0	09	2	2
2/12	12.3°S	144.4°W	1800	98	07	11	02	1	1010.2	1	2.0	83.0	74.3	83.0	2	2	5	2	0	0	08	2	2
2/13	12.9°S	145.0°W	0000	98	04	10	02	0	1007.8	7	1.7	84.0	76.0	84.1	2	2	2	5	0	0	04	2	2
2/13	13.6°S	145.6°W	0600	98	02	06	03	1	1010.2	2	1.9	83.1	74.6	83.5	6	6	8	4	0	0	04	2	1
2/13	14.2°S	146.3°W	1200	98	16	06	01	1	1010.2	7	2.0	81.3	74.6	83.0	2	2	8	5	0	0	16	2	1
2/13	14.9°S	146.8°W	1800	98	09	07	02	0	1011.9	2	1.7	83.6	75.2	83.4	1	1	2	5	0	0	03	3	1
2/14	15.6°S	147.3°W	0000	98	18	04	03	1	1009.1	7	1.7	83.2	75.5	87.4	6	6	8	4	0	0	18	4	1

Table 8.--Weather observations (USWB 1210-F), John R. Manning cruise 34 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
2/14	16.0°S	148.0°W	0600	98	18	04	01	1	1010.5	2	1.7	82.0	75.5	85.0	3	1	2	5	4	0	18	4	1
2/14	16.7°S	148.6°W	1200	98	08	12	03	1	1008.1	7	1.7	81.4	76.1	83.1	7	3	8	4	X	X	08	2	2
2/19	16.6°S	150.1°W	1800	98	07	08	02	X	1011.5	1	1.0	83.1	75.2	83.7	3	1	2	5	1	0	08	2	1
2/20	16.6°S	150.0°W	0000	98	08	11	14	2	1009.8	7	2.2	82.8	77.2	84.1	6	2	2	5	6	0	08	2	2
2/20	15.9°S	149.8°W	0600	98	03	12	01	1	1010.5	2	1.4	83.5	78.0	83.7	2	2	2	5	0	0	03	2	2
2/20	15.1°S	149.8°W	1800	98	04	07	03	1	1011.9	2	1.2	83.5	76.3	83.5	4	3	2	5	0	8	04	2	2
2/21	15.1°S	149.7°W	0000	98	04	04	02	1	1009.5	7	1.7	82.1	76.1	84.8	4	3	2	5	1	0	04	2	2
2/21	14.3°S	149.5°W	0600	98	06	04	01	8	1010.8	1	2.0	81.8	75.4	83.7	3	3	2	5	X	X	06	2	2
2/21	13.8°S	149.4°W	1200	98	05	07	01	1	1009.8	7	1.5	80.8	75.3	83.2	2	2	2	5	0	0	06	2	2
2/21	13.4°S	149.5°W	1800	98	01	14	16	8	1012.5	2	1.5	81.1	75.5	83.3	6	3	3	4	6	0	01	2	2
2/22	13.4°S	149.5°W	0000	98	34	03	01	1	1010.2	7	2.5	84.0	77.0	85.1	2	2	2	5	0	0	04	2	2
2/22	12.9°S	149.3°W	0600	98	05	14	02	1	1011.2	2	1.9	82.9	76.1	83.1	3	3	8	5	0	0	05	2	2
2/22	12.2°S	149.1°W	1200	98	06	13	03	1	1010.2	7	1.0	82.0	75.5	82.9	5	5	8	4	0	0	06	2	2
2/22	12.0°S	149.3°W	1800	98	07	14	02	2	1012.5	2	1.7	83.4	76.5	83.0	5	5	2	5	0	0	07	2	2
2/23	12.2°S	149.2°W	0000	98	07	14	02	2	1010.5	7	1.7	83.2	77.2	83.5	4	4	2	5	0	0	07	2	3
2/23	11.7°S	149.1°W	0600	98	07	16	01	1	1011.5	2	1.9	83.0	78.0	83.0	2	2	8	5	0	0	07	2	3
2/23	11.3°S	149.0°W	1200	98	08	17	02	0	1010.5	6	1.9	82.8	77.2	82.6	2	2	1	5	0	0	07	2	3
2/23	10.4°S	148.9°W	1800	98	11	16	03	0	1012.9	3	2.0	83.0	77.5	82.8	3	3	2	5	0	0	10	2	3
2/24	10.7°S	148.9°W	0000	98	08	11	01	0	1010.5	7	2.7	84.0	78.0	83.5	2	1	2	5	2	0	08	2	3
2/24	10.2°S	148.8°W	0600	98	07	17	02	0	1012.5	1	1.7	83.5	76.5	83.0	2	2	2	5	0	0	07	2	3
2/24	09.5°S	148.6°W	1200	98	10	15	02	0	1011.5	7	1.7	81.2	74.4	82.2	2	2	2	5	0	0	10	2	3
2/24	09.1°S	148.7°W	1800	98	09	12	02	0	1013.9	2	1.7	83.1	76.5	81.7	2	2	2	5	0	0	09	2	2
2/25	09.1°S	148.6°W	0000	98	08	12	02	0	1011.5	8	2.5	83.0	77.0	82.7	2	2	2	5	0	0	08	2	2
2/25	08.5°S	148.4°W	0600	98	09	14	02	0	1012.2	1	1.7	81.8	76.6	82.0	2	2	2	5	0	0	09	2	2
2/25	07.8°S	148.3°W	1200	98	09	12	02	0	1010.8	2	1.4	81.0	76.2	81.5	2	2	2	5	0	0	09	2	2
2/25	07.3°S	148.5°W	1800	98	08	12	03	1	1013.2	2	1.7	83.1	76.7	81.0	5	4	2	5	3	0	08	2	3
2/26	07.4°S	148.4°W	0000	98	07	09	01	1	1010.5	7	2.0	81.7	75.3	81.5	2	1	2	5	4	0	07	2	2
2/26	06.9°S	148.3°W	0600	98	07	12	01	0	1011.5	1	1.7	80.0	75.0	80.0	1	1	1	5	0	0	06	2	2
2/26	06.2°S	148.2°W	1200	98	07	08	02	0	1010.5	6	1.0	79.9	74.8	80.4	1	1	8	5	0	0	07	2	2
2/26	05.9°S	148.2°W	1800	98	09	12	02	0	1012.9	2	2.4	80.4	75.0	80.5	2	2	2	5	2	4	08	2	2
2/27	05.9°S	148.3°W	0000	98	06	07	03	1	1010.2	7	2.5	81.0	75.5	81.5	4	4	2	5	1	0	06	2	2
2/27	05.5°S	148.1°W	0600	98	08	07	01	1	1011.9	2	2.2	79.9	74.5	81.1	2	2	2	5	0	0	08	2	2
2/27	05.0°S	148.0°W	1200	98	08	10	02	0	1010.8	6	1.7	79.8	75.0	79.8	3	3	2	5	0	0	08	2	2
2/27	04.3°S	148.0°W	1800	98	09	11	02	0	1012.9	2	1.7	79.9	74.5	79.6	2	2	2	5	0	0	09	2	2
2/28	04.4°S	148.0°W	0000	98	08	09	02	0	1009.1	6	1.7	79.5	74.0	80.5	2	2	2	5	0	0	08	2	2
2/28	03.9°S	148.0°W	0600	98	06	09	02	0	1010.5	2	2.2	80.0	74.2	79.9	2	2	2	5	0	0	06	2	2
2/28	03.2°S	147.9°W	1200	98	10	11	02	0	1009.8	7	2.0	78.5	74.0	79.7	1	1	2	5	0	0	09	2	2
2/28	02.8°S	148.2°W	1800	98	09	12	03	1	1012.5	2	1.9	79.3	75.0	79.6	5	5	2	5	0	0	09	2	2
3/1	02.9°S	148.2°W	0000	98	09	10	03	1	1009.1	7	2.5	80.0	75.1	80.3	6	5	2	5	1	0	09	2	2
3/1	02.5°S	148.1°W	0600	98	12	12	01	1	1011.2	2	1.9	79.9	75.2	80.0	2	2	2	5	0	0	12	2	2
3/1	01.9°S	147.9°W	1200	98	08	08	02	0	1010.5	6	1.4	79.0	75.0	79.7	2	2	2	5	0	0	10	2	2
3/1	01.5°S	147.9°W	1800	98	08	09	01	0	1012.2	2	1.5	80.1	75.1	79.3	2	1	2	5	1	0	09	2	2
3/2	01.5°S	147.8°W	0000	98	08	08	03	0	1009.5	7	2.4	81.0	75.5	80.0	3	3	2	5	0	0	08	2	2
3/2	01.0°S	147.7°W	0600	98	08	08	01	0	1012.2	2	2.2	79.5	75.0	79.3	2	2	2	5	0	0	08	2	2
3/2	00.3°S	147.7°W	1200	98	08	09	02	0	1010.8	7	1.7	77.8	74.1	78.7	1	1	1	5	0	0	08	2	2

Table 8.--Weather observations (USWB 1210-F), John R. Manning cruise 34 (cont'd)

Date, 1957	Latitude	Longitude	Time, GMT	Visibility	Wind		Weather		Pressure			Temperature			Clouds						Waves		
					Direction, °T.	Speed, kt.	Present	Past	Bar. corr., mb.	Characteristic	Amt. change	Dry bulb, °F.	Wet bulb, °F.	Sea water, °F.	Total amount	Amount low	Type low	Height low	Type middle	Type high	Direction	Period	Height
3/2	00.1°N	148.0°W	1800	98	07	09	03	0	1013.2	2	1.9	79.2	74.8	79.0	3	3	2	5	0	0	07	2	1
3/3	00.1°N	147.9°W	0000	98	07	12	03	1	1009.8	7	2.5	78.8	74.5	79.9	5	5	2	5	0	0	07	2	1
3/3	00.5°N	147.9°W	0600	98	07	10	01	1	1010.5	1	1.4	79.0	75.5	79.2	2	2	2	5	0	0	07	2	1
3/3	01.0°N	148.0°W	1200	98	07	11	03	0	1010.2	8	1.2	78.5	74.8	79.5	3	3	2	5	0	0	07	2	1
3/3	01.1°N	148.0°W	1800	98	08	10	02	0	1012.5	2	1.7	80.4	75.1	79.6	2	2	2	5	0	0	08	2	2
3/4	01.1°N	148.0°W	0000	98	10	11	03	1	1009.5	7	2.5	79.5	75.0	80.8	5	5	2	5	0	0	10	2	3
3/4	01.5°N	147.9°W	0600	98	10	10	01	1	1010.2	2	1.7	79.0	75.0	80.0	3	3	2	5	0	0	10	2	2
3/4	02.0°N	147.9°W	1200	98	09	14	50	1	1009.8	6	1.7	79.2	75.6	79.9	3	3	3	4	0	0	09	2	2
3/4	02.0°N	148.0°W	1800	98	09	14	01	0	1010.8	2	1.7	80.2	75.2	79.8	3	3	2	5	0	1	09	2	2
3/5	01.9°N	148.0°W	0000	98	07	12	03	1	1008.1	7	2.7	81.8	76.1	80.9	5	5	2	5	0	0	07	2	3
3/5	02.4°N	148.0°W	0600	98	08	14	01	1	1009.1	2	1.7	79.8	75.3	80.3	2	2	1	5	0	0	08	2	3
3/5	03.0°N	147.9°W	1200	98	08	12	02	0	1008.8	7	1.9	79.2	76.0	79.9	3	3	2	5	0	0	08	2	3
3/5	03.0°N	148.0°W	1800	98	08	13	01	1	1010.2	3	1.5	80.3	76.0	80.0	4	4	2	5	0	0	08	2	3
3/6	03.0°N	148.1°W	0000	98	08	13	01	0	1007.5	7	2.0	80.0	75.4	80.4	3	3	2	5	0	0	08	2	3
3/6	03.4°N	148.5°W	0600	98	08	16	02	0	1009.5	2	2.4	80.5	76.0	80.1	1	1	1	5	0	0	08	2	2
3/6	04.2°N	148.8°W	1200	98	08	16	02	0	1009.5	7	1.7	80.1	76.0	80.3	1	1	1	5	0	0	08	2	2
3/6	04.9°N	149.1°W	1800	98	08	20	03	1	1011.5	1	1.0	81.3	76.0	80.4	5	5	8	5	0	0	04	2	3
3/7	05.5°N	149.4°W	0000	98	05	20	02	2	1008.5	7	1.9	82.2	76.7	81.0	5	5	8	5	0	0	05	2	3
3/7	06.1°N	149.7°W	0600	98	07	20	01	1	1010.5	2	1.7	81.8	76.8	81.2	2	2	8	5	0	0	05	2	3
3/7	06.6°N	149.9°W	1200	98	07	20	03	0	1010.2	8	1.5	80.2	76.0	80.8	3	3	2	5	0	0	06	2	3
3/7	07.3°N	150.3°W	1800	97	10	15	21	6	1012.5	2	2.0	77.0	75.0	80.9	8	8	7	4	X	X	07	2	3
3/8	07.9°N	150.6°W	0000	98	06	20	01	2	1010.2	7	2.4	79.5	75.0	80.5	6	6	7	4	0	0	05	2	4
3/8	08.4°N	151.0°W	0600	98	06	22	01	2	1011.2	3	1.9	79.0	75.3	79.8	4	4	2	5	0	0	06	2	4
3/8	09.1°N	151.4°W	1200	98	07	21	02	1	1011.2	7	1.7	78.1	74.6	79.3	3	3	8	5	0	0	07	2	4
3/8	09.8°N	151.8°W	1800	98	08	20	03	1	1013.2	1	1.7	79.0	74.3	79.6	6	6	8	5	0	0	08	2	4
3/9	10.5°N	152.3°W	0000	98	05	20	03	2	1012.2	6	1.7	78.4	73.8	79.3	6	4	2	5	4	0	05	2	4
3/9	11.1°N	152.6°W	0600	98	08	18	02	2	1012.5	2	2.2	79.0	74.1	79.0	6	6	2	5	0	0	08	2	4
3/9	11.7°N	153.0°W	1200	98	07	21	01	2	1011.5	7	1.4	77.0	74.0	78.0	4	4	2	5	X	X	07	2	3
3/9	12.4°N	153.4°W	1800	98	08	19	03	6	1013.5	2	0.9	77.0	72.2	77.3	7	5	8	5	5	0	08	2	3
3/10	13.1°N	153.8°W	0000	98	06	24	02	2	1012.2	7	2.2	76.1	72.4	77.0	6	3	2	5	3	0	05	3	4
3/10	13.6°N	154.0°W	0600	98	06	27	02	2	1013.5	2	2.0	75.2	71.0	76.1	6	6	2	5	X	X	06	3	4
3/10	14.2°N	154.3°W	1200	98	08	21	02	2	1013.9	4	0.0	73.5	69.2	74.8	6	6	2	5	X	X	08	3	4
3/10	14.9°N	154.7°W	1800	98	05	18	02	2	1015.6	1	1.7	75.2	70.9	74.9	6	4	2	5	4	0	06	3	4
3/11	15.5°N	155.1°W	0000	98	06	20	02	2	1014.9	7	1.7	76.0	70.0	75.2	8	4	8	5	2	X	04	3	4
3/11	16.2°N	155.5°W	0600	98	06	20	02	2	1015.6	2	2.5	73.5	68.5	74.5	7	3	8	5	3	X	04	3	3
3/11	16.8°N	155.8°W	1200	97	06	19	03	2	1015.2	7	1.4	73.2	67.0	74.0	8	8	8	5	X	X	05	3	3
3/11	17.4°N	156.1°W	1800	98	07	16	02	2	1017.3	2	2.7	72.8	67.0	73.4	8	8	8	5	X	X	05	3	3
3/12	18.4°N	156.5°W	0000	98	08	16	01	1	1016.6	7	1.9	73.6	68.0	73.6	3	2	2	5	8	0	08	3	3
3/12	19.1°N	156.9°W	0600	98	13	13	02	0	1017.3	3	1.2	73.4	67.7	73.8	3	3	8	5	0	0	07	2	3
3/12	19.9°N	157.2°W	1200	97	23	09	50	1	1016.9	6	0.5	70.4	67.8	74.0	8	8	7	4	X	X	08	2	2
3/12	20.7°N	157.6°W	1800	98	06	14	01	2	1018.0	1	1.4	73.6	67.0	74.4	5	5	8	5	0	0	03	2	2

Table 9.--Transparency, water color, and related observations, Hugh M. Smith cruise 38

Date, 1957	Noon position[1]		Secchi disc, meters	Water color, (Forel)	Sea[2]	Wind[3]	Percent sky cover
	Latitude	Longitude					
1/23	00°03'S	122°53'W	22.8	6	2	15-11	30
1/24	00°24'S	119°50'W	23.8	2	2	13-22	20
1/25	00°15'S	116°49'W	16.5	3	2	13-10	50
1/26	00°08'N	113°27'W	23.8	3	2	14-14	10
1/27	00°12'S	110°12'W	21.9	3	2	10-11	10
1/28	03°24'S	110°01'W	29.3	1	3	15-16	20
1/29	06°58'S	110°01'W	29.3	1	3	12-14	20
1/30	10°10'S	109°59'W	23.8	2	2	10-10	10
1/31	13°06'S	110°03'W	23.8	2	1	14-03	10
2/1	13°32'S	110°12'W	27.4	-	1	08-08	70
2/2	13°38'S	110°28'W	27.4	1	2	07-12	30
2/3	13°39'S	110°39'W	29.3	1	2	08-05	20
2/4	13°38'S	111°02'W	27.4	2	2	09-10	20
2/5	13°45'S	111°15'W	23.8	1	2	07-10	20
2/6	13°48'S	111°48'W	25.6	3	2	09-11	40
2/7	14°00'S	112°01'W	20.1	2	3	09-18	70
2/9	14°10'S	112°32'W	27.4	1	3	09-17	20
2/10	14°13'S	112°45'W	27.4	1	3	07-16	30
2/11	14°15'S	112°58'W	29.3	2	3	07-10	30
2/16	14°18'S	114°28'W	31.1	2	3	08-12	10
3/18	00°42'S	144°58'W	23.8	1	2	10-12	30

[1] All observations taken at 1200 LT.

[2] Sea state coded according to H.O. Pub. No. 606-c, second edition, 1956.

[3] Wind direction and speed coded according to U. S. Weather Bureau, Circular M.

Table 10.--Transparency, water color, and related observations, Charles H. Gilbert cruise 32

Date, 1957	Time, LT	Position		Secchi disc, meters	Water color (Forel)	Sea [1/]	Wind [2/]	Percent sky cover
		Latitude	Longitude					
1/25	1330	09°28'S	140°00'W	32.0	2.5	3	05-16	60
1/26	1330	09°40'S	139°37'W	27.4	3.0	3	07-12	40
1/27	1330	10°24'S	138°45'W	16.5	2.0	3	05-10	80
1/28	1330	09°01'S	139°26'W	23.8	2.2	2	03-07	40
1/29	1335	08°16'S	139°30'W	34.7	2.0	4	07-13	40
1/30	1340	08°10'S	140°38'W	32.9	3.0	3	06-13	20
2/3	1340	09°50'S	140°18'W	31.1	3.0	2	06-11	30
2/13	1020	15°54'S	146°22'W	34.7	1.5	1	07-04	10
2/24	1345	09°48'S	139°23'W	20.1	2.0	2	07-05	60
2/25	1345	10°13'S	138°54'W	20.1	4.0	1	06-07	40
2/26	1415	09°40'S	138°46'W	31.1	1.5	1	33-04	10
2/28	1340	08°24'S	140°34'W	31.1	2.5	1	06-08	50
3/3	1420	09°00'S	140°08'W	23.8	2.5	3	31-07	100
3/4	1400	08°49'S	140°29'W	25.6	2.5	2	05-08	20
3/5	1340	08°46'S	140°22'W	27.4	3.0	3	06-15	50
3/6	1415	09°36'S	139°27'W	31.1	3.0	3	08-16	30
3/7	1350	09°16'S	139°45'W	31.1	3.0	2	05-11	20
3/8	1310	09°06'S	140°19'W	30.2	2.5	2	11-10	70

[1/] Sea state coded according to H.O. Pub. No. 606-c, second edition, 1956.

[2/] Wind direction and speed coded according to U. S. Weather Bureau, Circular M.

Table 11.--Carbon fixation, inorganic phosphate, and surface temperature observations, Hugh M. Smith cruise 38

Station	Date, 1957	Time, LT	Position		C^{14}, Mg.C/hr./m.^{3}	PO_4-P, µg at./L.	Surface temp., °F.
			Latitude	Longitude			
1	1/14	0940	15°46'N	151°26'W	0.090	0.32	-
2	1/15	0800	14°01'N	147°24'W	0.146	0.47	76.5
3	1/16	0900	12°07'N	144°22'W	0.121	-	-
4	1/17	0915	10°25'N	141°24'W	0.822	0.43	76.9
5	1/18	0915	08°45'N	138°26'W	0.276	-	79.0
6	1/19	0915	06°54'N	135°04'W	0.481	0.59	78.7
7	1/20	0915	04°43'N	132°07'W	0.264	0.52	79.1
8	1/21	1010	02°53'N	129°06'W	0.374	0.76	77.9
9	1/22	1020	00°45'N	126°05'W	0.388	0.88	76.5
10	1/23	1115	00°04'N	123°57'W	0.414	0.98	75.7
11	1/24	1215	00°24'N	119°50'W	0.353	0.74	-
12	1/25	1200	00°15'S	116°49'W	-	0.88	-
13	1/26	1200	00°08'N	113°27'W	0.421	1.01	-
14	1/27	1230	00°12'S	110°12'W	0.509	0.68	76.4
15	1/28	1205	03°24'S	110°01'W	0.278	0.99	-
16	1/29	1225	06°58'S	110°01'W	0.044	1.01	-
17	1/30	1200	10°10'S	109°59'W	0.129	-	-
18	1/31	1200	13°06'S	110°03'W	0.130	0.28 P	80.9
19	2/1	1245	13°32'S	110°12'W	0.078	0.52	79.5
20	2/3	1215	13°39'S	110°39'W	0.073	0.45	-
21	2/4	1220	13°38'S	111°02'W	0.095	0.52	79.9
22	2/5	1245	13°45'S	111°15'W	0.077	0.51	79.9
23	2/6	1230	13°48'S	111°48'W	0.084	0.52	80.1
24	2/7	1200	14°00'S	112°01'W	0.081	0.52	79.4
25	2/8	1200	14°06'S	112°17'W	0.104	0.77 P	-
26	2/9	1200	14°10'S	112°33'W	0.118	0.52	-
27	2/10	1200	14°13'S	112°46'W	0.094	0.29	-
28	2/11	1245	14°15'S	112°59'W	0.358	0.56	80.3
29	2/12	1215	14°17'S	113°12'W	0.093	0.59	-
30	2/15	1230	14°24'S	114°07'W	0.071	1.20	80.2
31	2/16	1230	14°18'S	114°28'W	0.088	2.69 P	-
32	2/18	1230	13°56'S	116°38'W	0.105	1.27	-
33	2/19	1200	13°36'S	118°21'W	0.209	0.85	-
34	2/25	1200	01°36'S	129°51'W	0.257	0.55	78.4
35	2/26	1145	04°59'S	130°03'W	0.080	0.54	-
36	2/27	1150	08°29'S	130°03'W	0.066	0.60	-
37	2/28	1115	11°48'S	129°58'W	0.079	0.46	-
38	2/28	1400	12°12'S	130°01'W	-	0.48	85.5
39	3/1	1200	15°22'S	129°53'W	0.072	0.33	-
40	3/2	1145	18°08'S	130°39'W	0.018	0.41	82.4
41	3/3	1200	17°44'S	134°01'W	0.135	0.22	82.7
42	3/4	1215	17°37'S	136°44'W	0.164	0.68 P	-
43	3/5	1135	17°44'S	139°52'W	0.048	0.14	82.4
44	3/6	1130	18°00'S	140°57'W	0.072	0.37	82.6
45	3/7	1130	18°05'S	144°13'W	0.094	0.18	82.8
46	3/8	1130	17°57'S	147°34'W	0.005	0.37	83.8
47	3/17	1100	06°25'S	145°01'W	0.334	-	-
48	3/18	1130	03°18'S	144°57'W	0.059	1.25	-
49	3/19	1100	00°45'S	144°58'W	0.209	0.71	81.0

P = Possible contamination of sample

Table 12.--Zooplankton station data and sample volumes, Hugh M. Smith cruise 38

Station	Date, 1957	Time, LT 1/	Position		Depth, m.	Volume, cc./1000 m.^{3} 2/
			Latitude	Longitude		
2	1/22	2000-2032	00°02'N	124°56'W	200	30.2
	1/22	2010-2024	"	"	60	84.3
	1/22	2042-2109	00°02'N	124°54'W	Surface	97.2
	1/22	2110-2136	"	"	Surface	105.4
4	1/23	1135-1155	00°04'N	122°57'W	60	39.2
5	1/23	2000-2030	00°13'N	121°46'W	200	42.5
	1/23	2010-2022	"	"	60	94.5
	1/23	2050-2118	00°12'N	121°44'W	Surface	51.3
	1/23	2119-2145	"	"	Surface	57.6
7	1/24	1135-1153	00°25'N	119°51'W	60	37.7
8	1/24	2005-2041	00°13'N	118°49'W	200	30.4
	1/24	2015-2031	"	"	60	113.9
	1/24	2050-2116	00°11'N	118°46'W	Surface	57.7
	1/24	2117-2143	"	"	Surface	61.4
10	1/25	1140-1200	00°14'S	116°50'W	60	38.3
11	1/25	2000-2044	00°08'S	115°32'W	200	36.0
	1/25	2014-2030	"	"	60	126.1
	1/25	2045-2110	00°06'S	115°30'W	Surface	80.2
	1/25	2111-2136	"	"	Surface	93.6
13	1/26	1140-1201	00°08'N	113°28'W	60	57.4
14	1/26	2005-2048	00°01'S	112°14'W	200	42.9
	1/26	2018-2035	"	"	59	135.3
	1/26	2050-2115	00°03'S	112°14'W	Surface	87.9
	1/26	2116-2143	"	"	Surface	94.1
15	1/27	1115-1129	00°12'S	110°13'W	60	53.2
16	1/27	2000-2037	01°23'S	110°06'W	200	39.3
	1/27	2010-2026	"	"	60	170.1
	1/27	2040-2109	01°23'S	110°04'W	Surface	147.6
	1/27	2110-2136	"	"	Surface	133.9
18	1/28	1135-1134	03°23'S	110°03'W	60	57.9
19	1/28	2015-2051	04°43'S	109°45'W	177	31.8
	1/28	2026-2041	"	"	53	73.2
	1/28	2055-2120	04°45'S	109°44'W	Surface	82.0
	1/28	2121-2146	"	"	Surface	100.6
21	1/29	1140-1200	06°58'S	110°02'W	60	55.3
23	1/29	2005-2047	07°53'S	110°04'W	169	33.6
	1/29	2015-2030	"	"	51	60.9
	1/29	2055-2121	07°55'S	110°02'W	Surface	39.5
	1/29	2122-2148	"	"	Surface	40.0
25	1/30	1135-1156	10°10'S	110°00'W	60	28.9
28	1/31	1130-1150	13°06'S	110°04'W	60	17.6
44	2/25	1105-1131	01°35'S	129°52'W	60	47.7
45	2/25	2000-2045	02°58'S	129°55'W	207	45.0
	2/25	2013-2030	"	"	62	103.0
	2/25	2100-2127	03°00'S	129°52'W	Surface	91.1
	2/25	2128-2153	"	"	Surface	93.2
46	2/26	1100-1121	04°59'S	130°07'W	60	44.7

1/ Stations 2-7 - +8 time zone
Stations 8-28 - +7 " "
Station 44 - +8 " "
Stations 45-65 - +9 " "

2/ All fish, jellies >2 cm. and organisms >5 cm. are not included.

Table 12.--Zooplankton station data and sample volumes, Hugh M. Smith cruise 38 (cont'd)

Station	Date, 1957	Time, LT [1]	Position		Depth, m.	Volume, cc./1000 m.^{3} [2]
			Latitude	Longitude		
47	2/26	2120-2206	06°32'S	130°04'W	181	21.5
	2/26	2134-2152	"	"	54	53.5
	2/26	2210-2234	06°33'S	130°01'W	Surface	71.2
	2/26	2235-2259	"	"	Surface	71.1
48	2/27	1100-1120	08°28'S	130°04'W	60	36.6
49	2/27	2115-2159	10°00'S	130°00'W	200	22.7
	2/27	2129-2146	"	"	60	48.7
	2/27	2200-2224	10°00'S	129°58'W	Surface	63.7
	2/27	2225-2249	"	"	Surface	60.3
50	2/28	1100-1118	11°48'S	129°58'W	56	28.2
51	2/28	2130-2214	13°27'S	130°01'W	200	14.8
	2/28	2144-2200	"	"	60	38.6
	2/28	2215-2239	13°30'S	130°00'W	Surface	66.2
	2/28	2240-2304	"	"	Surface	117.5
53	3/1	1130-1148	15°20'S	129°53'W	60	33.7
54	3/1	2000-2048	16°30'S	130°04'W	151	19.2
	3/1	2017-2034	"	"	45	54.3
	3/1	2050-2114	16°35'S	130°04'W	Surface	78.1
	3/1	2115-2140	"	"	Surface	99.3
56	3/2	1130-1146	18°09'S	130°39'W	60	7.3
57	3/2	2040-2119	18°03'S	131°53'W	177	11.1
	3/2	2052-2106	"	"	53	18.6
	3/2	2120-2144	18°01'S	131°54'W	Surface	23.0
	3/2	2145-2209	"	"	Surface	17.8
58	3/3	1130-1152	17°50'S	134°01'W	60	22.9
59	3/3	2000-2031	17°50'S	135°06'W	200	19.8
	3/3	2008-2022	"	"	60	46.1
	3/3	2035-2059	17°48'S	135°06'W	Surface	42.9
	3/3	2100-2124	"	"	Surface	41.6
61	3/4	1130-1150	17°39'S	136°41'W	60	20.2
63	3/5	1140-1201	17°44'S	139°52'W	60	6.8
64	3/5	2030-2102	17°56'S	140°28'W	200	20.4
	3/5	2040-2052	"	"	60	21.3
	3/5	2115-2138	17°55'S	140°25'W	Surface	17.7
	3/5	2139-2203	"	"	Surface	51.6
65	3/6	1130-1144	18°00'S	140°57'W	60	7.1
66	3/6	2030-2110	17°55'S	142°28'W	192	6.0
	3/6	2042-2059	"	"	58	13.1
	3/6	2115-2139	17°56'S	142°35'W	Surface	9.9
	3/6	2140-2204	"	"	Surface	11.3
67	3/7	1125-1141	18°04'S	144°13'W	60	13.0
68	3/7	2000-2039	18°03'S	145°30'W	200	6.6
	3/7	2011-2028	"	"	60	12.5
	3/7	2040-2104	18°02'S	145°31'W	Surface	9.1
	3/7	2105-2129	"	"	Surface	12.9
70	3/8	1100-1118	17°57'S	147°34'W	60	4.3
73	3/15	1100-1126	12°30'S	145°00'W	60	28.0

[1] Stations 45-65 - +9 time zone
Stations 66-87 - +10 " "

[2] All fish, jellies >2 cm. and organisms >5 cm. are not included.

Table 12.--Zooplankton station data and sample volumes, Hugh M. Smith cruise 38 (cont'd)

Station	Date, 1957	Time, LT[1]	Position		Depth, m.	Volume, cc./1000 m.^{3}[2]
			Latitude	Longitude		
75	3/15	2020-2101	11°18'S	145°02'W	200	22.8
	3/15	2031-2050	"	"	60	100.6
	3/15	2105-2129	11°18'S	144°59'W	Surface	29.2
	3/15	2130-2154	"	"	Surface	65.9
77	3/16	1100-1123	09°28'S	145°10'W	61	47.6
79	3/16	2020-2102	08°12'S	145°12'W	162	29.9
	3/16	2034-2051	"	"	49	85.9
	3/16	2103-2128	08°09'S	145°12'W	Surface	47.9
	3/16	2129-2153	"	"	Surface	40.4
81	3/17	1100-1124	06°25'S	145°01'W	60	29.6
82	3/17	2100-2146	05°00'S	145°00'W	200	23.8
	3/17	2114-2132	"	"	60	55.6
	3/17	2147-2211	05°01'S	144°57'W	Surface	31.5
	3/17	2212-2236	"	"	Surface	38.4
84	3/18	1100-1130	03°19'S	144°59'W	60	29.9
85	3/18	2020-2107	02°04'S	144°56'W	185	27.9
	3/18	2035-2055	"	"	55	79.0
	3/18	2108-2133	02°06'S	144°54'W	Surface	43.0
	3/18	2134-2157	"	"	Surface	37.9
87	3/19	1100-1128	00°45'S	144°58'W	60	54.0

[1] Stations 66-87 - +10 time zone

[2] All fish, jellies >2 cm. and organisms >5 cm. are not included.

Table 13.--Zooplankton station data and sample volumes, Charles H. Gilbert cruise 32

Station	Date, 1957	Time, LT	Position		Depth, m.	Volume, cc./1000 m.^{3}[1]
			Latitude	Longitude		
53	2/19	1937-2007	14°57'S	146°20'W	Surface	19.1
54	2/20	0347-0416	14°18'S	145°32'W	Surface	12.2
56	2/21	0346-0416	12°05'S	143°06'W	Surface	25.7
57	2/21	1933-2003	10°39'S	141°33'W	Surface	35.5
58	2/22	0345-0415	09°56'S	141°03'W	Surface	47.8
66	2/27	1936-2006	09°22'S	139°37'W	Surface	16.1
71	3/2	2121-2151	08°57'S	139°54'W	Surface	117.8

[1] All fish, jellies >2 cm. and organisms >5 cm. are not included.

Table 14.--Common and scientific names of fish caught

Yellowfin tuna	Neothunnus macropterus (Temminck and Schlegel)
Bigeye tuna	Parathunnus sibi (Temminck and Schlegel)
Albacore	Germo alalunga (Bonnaterre)
Skipjack	Katsuwonus pelamis (Linnaeus)
Little tuna	Euthynnus yaito Kishinouye
Dogtooth tuna	Gymnosarda nuda (Günther)
Dolphin	Coryphaena hippurus Linnaeus
Shortnosed spearfish	Tetrapturus angustirostris Tanaka
White marlin	Istiompax marlina (Jordan and Hill)
Black marlin	Makaira ampla (Poey)
Striped marlin	Makaira audax (Philippi)
Wahoo	Acanthocybium solandri (Cuvier and Valenciennes)
Whitetip shark	Pterolamiops longimanus (Poey)
Silky shark	Eulamia floridanus (Bigelow, Schroeder, and Springer)
Great blue shark	Prionace glauca (Linnaeus)
Bigeye thresher shark	Alopias superciliosus (Lowe)
Bonito shark	Isurus glaucus Müller and Henle
Hammerhead shark	Sphyrna lewini (Griffith)
Lancet fish	Alepisaurus sp.
Puffer	Lagocephalus lagocephalus (Linnaeus)
Marquesan sardine	Harengula vittata (Cuvier and Valenciennes)
Goatfish	Upeneus parvus Poey
Red snapper	Lutjanus bohar (Forskål)
Green snapper	Aprion virescens Cuvier and Valenciennes
Jack	Caranx ignobilis (Forskål)
Jack	Caranx lugubris Poey
Jack	Caranx melampygus Cuvier and Valenciennes
Barracuda	Sphyraena nigripinnis Temminck and Schlegel

Table 15.--Surface troll catch and related data, Hugh M. Smith cruise 38

Date, 1957	Time, LT	Position		Species	Number	Average length, cm.
		Latitude	Longitude			
1/16	1730	11°30'N	143°19'W	Dolphin	1	94.0
1/17	1645	09°53'N	140°26'W	Dolphin	1	102.3
1/18	0920	08°43'N	138°23'W	Dolphin	2	101.8
1/18	1135	08°33'N	138°07'W	Dolphin	2	86.6
1/31	1450	13°22'S	110°02'W	Skipjack	1	74.8
2/23	1100	05°32'S	128°19'W	Skipjack	1	-
3/20	1635	02°37'N	145°31'W	Yellowfin	1	43.0
3/22	1230	08°23'N	149°21'W	Wahoo	2	-
3/24	1300	14°45'N	151°42'W	Wahoo	2	-
3/26	0930	20°48'N	157°43'W	Dolphin	1	-

Table 16.--Surface troll catch and related data, Charles H. Gilbert cruise 32

Date, 1957	Time, LT	Position		Species	Number [1/]	Average length, cm.
		Latitude	Longitude			
1/16	1200	11°31'N	151°31'W	Dolphin	1	95.7
1/16	1740	10°48'N	151°09'W	Dolphin	1	98.5
1/18	1630	05°28'N	147°35'W	Skipjack	2	70.5
1/21	1015	02°21'S	143°04'W	Skipjack	1	75.0
1/25	0849	09°23'S	140°09'W	Wahoo	2	158.4
1/28	0748	09°27'S	138°53'W	Yellowfin	4	115.5
1/28	0900	09°24'S	138°56'W	Wahoo	1	149.4
1/28	1313	09°03'S	139°23'W	Wahoo	1	126.2
1/29	0515	08°57'S	139°30'W	Yellowfin	5	103.2
1/30	0513	07°53'S	139°59'W	Wahoo	1	132.0
1/30	0514	07°53'S	139°59'W	Little tuna	1	-
1/30	0515	07°53'S	139°59'W	Yellowfin	1	-
1/30	1040	07°53'S	140°05'W	Little tuna	1	74.3
1/30	1115	07°56'S	140°40'W	Little tuna	1	48.0
1/31	1205	08°54'S	140°15'W	Wahoo	1	159.4
2/2	0520	08°58'S	140°06'W	Yellowfin	1	96.9
2/3	0650	09°27'S	140°05'W	Wahoo	1	135.8
2/4	0655	09°18'S	140°01'W	Wahoo	3	131.6
2/5	0952	08°47'S	140°00'W	Yellowfin	2	97.3
2/5	1230	08°46'S	140°11'W	Yellowfin	2	114.4
2/13	1400	16°08'S	146°55'W	Skipjack	4	57.4
2/13	1410	16°08'S	146°55'W	Yellowfin	3	54.1
2/23	0535	09°00'S	140°05'W	Yellowfin	4	69.8
2/24	0743	09°32'S	139°54'W	Skipjack	1	75.3
2/26	0515	10°33'S	138°40'W	Wahoo	2	137.2
2/28	0800	08°56'S	140°13'W	Yellowfin	1	106.8
2/28	1740	07°59'S	140°43'W	Yellowfin	1	86.7
3/1	0530	07°54'S	140°39'W	Yellowfin	2	106.3
3/1	0530	07°54'S	140°39'W	Little tuna	5	59.4
3/1	0940	07°49'S	140°19'W	Wahoo	1	136.3
3/1	0945	07°49'S	140°19'W	Doogtooth tuna	1	116.7
3/1	0948	07°49'S	140°19'W	Red snapper	2	64.4
3/1	0953	07°50'S	140°19'W	Little tuna	1	62.1
3/1	0955	07°50'S	140°19'W	Jack	2	76.0
3/1	0955	07°50'S	140°19'W	Green snapper	2	73.6
3/3	0705	08°49'S	140°01'W	Wahoo	3	133.9
3/7	1430	09°11'S	139°50'W	Skipjack	1	75.0
3/13	0555	06°33'S	141°29'W	Dolphin	2	31.2
3/16	0920	03°01'N	146°46'W	Skipjack	1	43.0
3/17	1120	06°26'N	148°19'W	Skipjack	1	46.4
3/19	0730	11°23'N	151°54'W	Dolphin	1	100.8
3/21	1350	18°04'N	155°48'W	Dolphin	1	104.7

[1/] Fish of the same species caught within a 1-hour interval were combined in a single number.

Table 17.--Surface troll catch and related data, John R. Manning cruise 34

Date, 1957	Time, LT	Position		Species	Number[1/]	Average length, cm.
		Latitude	Longitude			
1/5	1700	19°23'N	156°02'W	Dolphin	1	97.1
1/9	1530	14°31'N	148°17'W	Dolphin	1	70.1
1/9	1745	14°24'N	148°03'W	Dolphin	1	95.3
1/11	1145	12°17'N	144°14'W	Dolphin	3	92.6
1/12	1725	10°25'N	141°14'W	Dolphin	1	80.9
1/15	1115	05°43'N	134°17'W	Yellowfin	2	38.6
1/30	1700	12°38'S	134°57'W	Skipjack	1	74.6
1/31	1430	11°18'S	137°36'W	Skipjack	1	75.7
2/2	1745	09°23'S	138°28'W	Skipjack	1	50.5
2/5	0735	07°31'S	139°36'W	Skipjack	1	79.5
2/10	1630	08°34'S	140°32'W	Skipjack	1	49.0
2/11	0830	10°08'S	142°02'W	Bigeye	2	50.6
3/2	1810	00°12'N	147°46'W	Skipjack	1	73.6
3/5	1530	02°57'N	148°03'W	Skipjack	1	72.0
3/7	0605	07°02'N	140°10'W	Wahoo	1	110.3
3/8	1730	10°51'N	152°26'W	Dolphin	1	87.4
3/9	0715	12°20'N	153°19'W	Dolphin	2	93.3
3/9	1145	12°50'N	153°37'W	Dolphin	1	98.7
3/11	0640	17°28'N	156°04'W	Wahoo	1	120.4
3/11	0645	17°28'N	156°04'W	Dolphin	1	74.4

[1/] Fish of the same species caught within a 1-hour interval were combined in a single number.

Table 18.--Longline station data and catch per 100 hooks, John R. Manning cruise 34

Station	Date, 1957	Noon position		Number of baskets	Number of hooks	Catch per 100 hooks			
		Latitude	Longitude			YF	BE	ALB	SJ
1	1/16	04°29'N	132°17'W	60	651	0.2	0.2	-	-
2	1/17	03°33'N	132°06'W	60	638	1.6	0.6	-	-
3	1/19	01°34'N	132°09'W	60	653	0.3	0.2	-	-
4	1/20	00°07'S	132°19'W	60	639	0.5	0.3	-	-
5	1/21	01°54'S	132°07'W	60	648	0.6	0.2	-	0.2
6	1/22	03°29'S	132°04'W	60	639	4.1	2.7	-	0.2
7	1/23	04°46'S	132°09'W	60	652	0.2	-	-	0.2
8	1/24	06°22'S	132°15'W	60	641	1.4	0.9	-	0.5
9	1/25	07°49'S	132°02'W	60	653	1.2	0.3	-	0.2
10	1/26	09°37'S	132°03'W	60	641	0.5	0.6	-	0.2
11	1/27	10°58'S	132°03'W	60	651	0.9	-	0.2	0.2
12	1/28	12°29'S	132°07'W	60	639	0.9	-	0.2	-
13	1/29	14°02'S	132°03'W	58	632	0.6	0.2	0.5	0.2
14	2/1	10°47'S	138°38'W	60	640	1.2	0.3	-	0.2
15	2/2	09°31'S	138°39'W	60	646	3.9	-	-	-
16	2/3	08°33'S	138°34'W	60	641	1.6	0.2	0.2	0.5
17	2/4	07°35'S	138°38'W	60	650	0.9	-	-	0.3
18	2/5	07°31'S	139°36'W	60	641	1.1	0.3	-	0.2
19	2/6	08°35'S	139°39'W	60	654	0.6	-	-	0.8
20	2/7	09°29'S	139°38'W	60	632	7.9	-	0.5	0.2
21	2/8	10°22'S	139°40'W	60	647	4.9	-	0.3	0.2
22	2/9	09°14'S	140°33'W	60	639	8.4	-	0.3	-
23	2/10	08°23'S	140°38'W	60	648	4.9	0.2	0.2	0.2
24	2/19	16°34'S	150°06'W	60	622	0.2	-	0.6	-
25	2/20	15°05'S	149°52'W	60	650	0.2	-	-	-
26	2/21	13°24'S	149°37'W	60	637	0.5	-	0.3	0.2
27	2/22	12°05'S	149°18'W	60	646	0.6	-	0.3	-
28	2/23	10°35'S	148°57'W	60	637	0.9	-	-	0.2
29	2/24	09°05'S	148°40'W	60	647	0.5	-	0.3	-
30	2/25	07°18'S	148°29'W	60	638	1.1	-	0.2	0.6
31	2/26	05°51'S	148°21'W	60	646	0.2	0.2	-	0.2
32	2/27	04°18'S	148°02'W	60	638	0.2	0.2	-	-
33	2/28	02°52'S	148°16'W	60	647	-	0.2	-	0.5
34	3/1	01°26'S	147°54'W	60	638	-	-	-	-
35	3/2	00°06'N	147°58'W	60	645	1.6	-	-	0.2
36	3/3	01°07'N	148°05'W	60	637	0.2	-	-	-
37	3/4	02°00'N	148°06'W	60	647	0.3	0.3	-	-
38	3/5	03°01'N	148°07'W	60	642	0.6	0.2	-	-

Note: Code to abbreviations - YF = Yellowfin
BE = Bigeye
ALB = Albacore
SJ = Skipjack

Table 19.--Longline catch record in numbers of fish, John R. Manning cruise 34

Station	Yellowfin	Bigeye	Albacore	Skipjack	Marlin	Shark	Miscellaneous
1	1	1	-	-	2	10	1 lancet fish
2	10	4	-	-	-	16	-
3	2	1	-	-	-	2	-
4	3	2	-	-	-	2	-
5	4 1/	1	-	1	2	17	-
6	26	17	-	1	1	11 1/	-
7	1	-	-	1	-	6	-
8	9	6	-	3	-	1	1 puffer
9	8	2	-	1	-	1	1 lancet fish
10	3	4	-	1	-	5	-
11	6	-	1	1	5	4	-
12	6	-	1	-	-	2	-
13	4	1	3	1	7	1	1 lancet fish
14	8	2	-	1	-	12 1/	-
15	25	-	-	-	6	10	-
16	10	1	1	3	1	9	-
17	6	-	-	2	1	3	1 wahoo
18	7	2	-	1	1	10	-
19	4	-	-	5	2	8	-
20	50	-	3	1	1	35	-
21	32	-	2	1	-	74 1/	-
22	54	-	2	-	3	16	-
23	32	1	1	1	1	7	1 barracuda
24	1	-	4	-	2	2	2 dolphin
25	1	-	-	-	4	1	1 barracuda, 1 lancet fish
26	3	-	2	1	-	7	1 barracuda
27	4	-	2	-	-	1	1 barracuda, 2 wahoo
28	6	-	-	1	-	1	-
29	3	-	2	-	1	6	1 barracuda, 1 shortnosed spearfish
30	7	-	1	4	1	8	2 wahoo
31	1	1	-	1	-	6	-
32	1	1	-	-	1	1	-
33	-	1	-	3	-	2	-
34	-	-	-	-	-	8	-
35	10	-	-	1	-	17	-
36	1	-	-	-	-	5	-
37	2	2	-	-	-	6	2 lancet fish 1/
38	4	1	-	-	-	5	1 wahoo
Total	355	51	25	36	42	338	

1/ Includes one caught on anchor line.

Table 20.--Summary of live-bait fishing, Charles H. Gilbert cruise 32

Date, 1957	Time, LT	Position		Number of passes	Number of minutes chummed	Number and species caught	Amount of bait, buckets	
		Latitude	Longitude					
1/25	0900	09°23'S	140°08'W	4	18	0 SJ	-	1/
1/25	0950	09°23'S	140°11'W	1	28	0 YF	3	
1/25	1044	09°25'S	140°06'W	1	3	0 SJ	<1	
1/25	1405	09°25'S	139°58'W	7	17	0 SJ	3	
1/25	1506	09°22'S	139°57'W	2	6	0 SJ	-	
1/25	1543	09°18'S	140°02'W	1	1	0 SJ	<1	
1/25	1558	09°18'S	140°02'W	1	1	0 SJ	<1	
1/26	0611	09°24'S	140°07'W	4	8	0 SJ	-	
1/26	0707	09°28'S	140°06'W	2	3	0 ?	-	
1/26	0942	09°33'S	139°53'W	1	17	28 SJ, 6 YF	-	
1/26	1035	09°33'S	139°55'W	1	2	0 SJ	-	
1/26	1048	09°33'S	139°55'W	1	6	12 SJ	-	
1/26	1241	09°38'S	139°43'W	1	1	0 SJ	1/2	
1/26	1532	09°48'S	139°15'W	1	1	0 SJ	1/2	
1/26	1631	09°48'S	139°15'W	2	2	0 SJ	1/2	
1/26	1655	09°49'S	139°13'W	4	18	0 YF	5	
1/27	0754	09°58'S	139°01'W	1	1	0 ?	1/2	2/
1/27	0845	10°02'S	139°01'W	1	21	17 SJ	6	2/
1/27	0959	10°04'S	138°56'W	1	22	147 SJ	10	2/
1/27	1410	10°27'S	138°45'W	1	4	0 YF	-	2/
1/27	1426	10°27'S	138°45'W	4	8	23 SJ	6	2/
1/28	0745	09°28'S	138°53'W	2	7	0 YF, 0 SJ	-	3/
1/28	0814	09°25'S	138°54'W	1	1	0 YF	-	3/
1/28	0819	09°25'S	138°54'W	1	27	26 YF, 3 SJ	4	3/
1/28	-	-	-	1	1	0 YF	<1	3/
1/29	0848	08°47'S	139°12'W	1	3	0 SJ	-	
1/29	1241	08°25'S	139°26'W	1	1	0 SJ	-	
1/29	1513	08°04'S	139°37'W	1	1	0 YF	-	
1/30	0517	07°53'S	140°00'W	1	18	1 YF	-	
1/30	0817	07°48'S	140°25'W	4	33	39 SJ	-	
1/31	0733	08°45'S	140°06'W	1	10	0 YF	-	
1/31	0805	08°45'S	140°06'W	2	23	36 SJ	5	
1/31	0924	08°44'S	140°12'W	4	8	0 YF	-	
1/31	1213	08°57'S	140°15'W	2	3	0 YF	-	
2/2	0812	09°19'S	140°10'W	1	3	0 SJ	-	
2/2	0900	09°25'S	140°08'W	2	31	428 SJ	14	
2/2	1114	09°38'S	140°06'W	5	27	290 SJ	20	
2/2	1314	09°15'S	140°15'W	10	16	2 SJ	-	2/
2/2	1503	09°20'S	140°15'W	6	9	0 SJ	-	3/
2/3	0541	09°27'S	140°06'W	6	18	0 SJ	2	3/
2/3	0709	09°28'S	140°04'W	2	8	55 SJ	8	2/
2/3	0818	09°15'S	140°04'W	1	3	0 SJ	-	3/
2/3	0909	09°35'S	140°04'W	2	2	0 ?	-	3/
2/4	0721	09°21'S	139°58'W	1	1	0 ?	-	3/
2/4	0735	09°21'S	139°58'W	1	1	0 SJ	-	3/

1/ Dash indicates unknown quantity. 2/ Sardines and goatfish mixed. 3/ Goatfish.

Table 20.--Summary of live-bait fishing, Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Time, LT	Position		Number of passes	Number of minutes chummed	Number and species caught	Amount of bait, buckets
		Latitude	Longitude				
2/4	0752	09°21'S	139°57'W	5	20	10 SJ	15 3/
2/4	0935	09°19'S	139°57'W	6	10	0 SJ	8 3/
2/5	0833	08°49'S	139°55'W	1	2	0 SJ	- 1/
2/5	0903	08°46'S	140°00'W	3	4	0 SJ	2
2/5	0937	08°47'S	139°59'W	1	3	0 SJ	-
2/5	0950	08°47'S	139°59'W	1	3	0 YF	-
2/5	1124	08°44'S	140°10'W	4	11	0 YF	-
2/5	1152	08°45'S	140°12'W	2	6	1 LT	-
2/5	1211	08°45'S	140°12'W	4	10	0 YF	-
2/5	1255	08°45'S	140°12'W	1	2	0 ?	-
2/7	1447	08°57'S	140°15'W	11	33	226 SJ	20 2/
2/7	1641	08°57'S	140°15'W	2	4	0 SJ	- 2/
2/12	0925	14°20'S	146°06'W	1	2	0 YF	-
2/12	1127	14°38'S	146°07'W	3	16	8 YF, 46 SJ	5
2/12	1234	14°41'S	146°06'W	1	9	9 YF, 21 SJ	1-1/2
2/13	0943	15°54'S	146°22'W	2	15	170 SJ	2
2/23	0722	09°16'S	140°06'W	5	9	0 SJ	3
2/23	0800	09°17'S	140°06'W	5	10	0 SJ	2
2/23	0837	09°17'S	140°06'W	1	1	0 SJ	< 1
2/23	0852	09°17'S	140°06'W	3	6	0 SJ	4
2/23	1014	09°21'S	140°07'W	3	9	0 SJ	7
2/23	1426	09°20'S	139°56'W	1	1	0 SJ	< 1
2/24	0558	09°28'S	140°03'W	2	7	0 ?	-
2/24	0817	09°32'S	139°52'W	5	6	0 SJ	2
2/24	0945	09°34'S	139°48'W	3	9	0 SJ	1
2/24	1447	09°50'S	139°15'W	2	47	455 SJ	18
2/25	1438	10°18'S	138°46'W	3	35	505 SJ	25
2/26	1029	09°58'S	138°40'W	2	7	0 YF	2
2/26	1109	09°53'S	138°39'W	4	8	0 SJ	1
2/26	1340	09°40'S	138°46'W	1	13	0 YF	3
2/26	1421	09°40'S	138°51'W	3	15	0 SJ	2
2/26	1517	09°41'S	138°55'W	3	7	0 YF, 12 SJ	3
2/28	0830	08°54'S	140°15'W	6	17	0 SJ	9
2/28	0927	08°53'S	140°17'W	2	3	0 YF	3
2/28	0956	08°50'S	140°20'W	1	5	0 SJ	5
2/28	1556	08°06'S	140°42'W	1	11	2 YF	5
2/28	1616	08°05'S	140°44'W	1	1	0 ?	1
3/1	0550	07°55'S	140°38'W	1	11	0 YF, 1 LT	1
3/1	0754	07°50'S	140°28'W	5	19	3 SJ	6
3/1	1048	07°57'S	140°18'W	5	10	46 SJ	5
3/3	0652	08°48'S	140°00'W	1	3	0 SJ	-
3/3	1014	08°59'S	140°03'W	1	1	0 SJ	-
3/3	1351	09°00'S	140°09'W	4	8	6 SJ	-
3/4	1117	08°58'S	140°21'W	7	17	62 SJ	22
3/4	1322	08°49'S	140°29'W	1	20	167 SJ	12

1/ Dash indicates unknown quantity. 2/ Sardines and goatfish mixed. 3/ Goatfish.

Table 20. --Summary of live-bait fishing, Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Time, LT	Position		Number of passes	Number of minutes chummed	Number and species caught	Amount of bait, buckets
		Latitude	Longitude				
3/5	0558	08°47'S	140°15' W	2	9	96 SJ	10
3/5	0631	08°47'S	140°16' W	1	3	15 SJ	2
3/5	0653	08°47'S	140°17' W	5	44	275 SJ	16
3/5	1155	08°45'S	140°12' W	2	3	0 YF	-
3/5	1203	08°46'S	140°18' W	2	3	0 SJ	-
3/5	1306	08°47'S	140°22'W	1	23	86 SJ	12
3/5	1441	08°53'S	140°20'W	4	12	6 SJ	6
3/5	1619	08°56'S	140°15' W	1	2	0 SJ	-
3/6	1203	09°34'S	139°30'W	3	9	2 SJ	13
3/6	1304	09°37'S	139°26'W	2	31	650 SJ	25
3/8	1233	09°06'S	140°19'W	1	25	220 SJ	25
3/8	1413	09°08'S	140°12'W	1	53	519 SJ	30
3/9	1040	09°03'S	140°10'W	?	37	160 SJ	12
		Total				4,838 SJ 52 YF	

Table 21.--Summary of fishing for bait, Charles H. Gilbert cruise 32

Date, 1957	Locality	Amount seen per day, buckets 1/	Number of sets		Catch, buckets 2/
			Day	Night	
1/24	Taiohae, Nuku Hiva	1,200	6	-	76
1/25	Hate Au Bay, Hua Pou	0	-	-	-
1/27	Taa Huku Bay, Hiva Oa	-	1	-	40
1/27	Omoa Bay, Fatu Hiva	trace	-	-	-
1/29	Invisible Bay, Ua Huka	-	1	-	few
1/29	Hananai Bay, Ua Huka	trace	-	-	-
1/31	Anaho Bay, Nuku Hiva	500	-	-	-
2/1	Taiohae, Nuku Hiva	-	8	-	74
2/4	Taipi Vai, Nuku Hiva	-	4	-	91
2/5	Taiohae, Nuku Hiva	-	1	-	22
2/6	Taiohae, Nuku Hiva	-	5	-	25
2/7	Taiohae, Nuku Hiva	-	4	-	23
2/7	Tai Oa Bay, Nuku Hiva	-	3	-	4
2/8	Hatiheu, Nuku Hiva	-	-	2	45
2/8	Hatiheu, Nuku Hiva	-	2	-	5.5
2/8	Anaho Bay, Nuku Hiva	-	2	-	600
2/22	Taiohae, Nuku Hiva	-	3	-	76
2/25	Hana Tetou, Tahu Ata	-	2	-	23
2/25	Hana Hevane, Tahu Ata	-	1	-	10
2/27	Hana Hevane, Tahu Ata	-	0	-	-
2/27	Taa Huku Bay, Hiva Oa	-	1	-	0
2/27	W. portion Vipihai Bay, Hiva Oa	0	-	-	-
2/27	Hana Menu and Hana Heka, Hiva Oa	0	-	-	-
2/28	Taiohae, Nuku Hiva	-	1	-	120
3/2	Taiohae, Nuku Hiva	-	1	-	100
3/3	Taiohae, Nuku Hiva	-	4	-	30
3/4	Taiohae, Nuku Hiva	-	2	-	27
3/5	Hakiheu, Nuku Hiva	-	-	1	130
3/6	Taiohae, Nuku Hiva	-	-	2	105
3/8	Taiohae, Nuku Hiva	-	1	2	57
3/9	Taiohae, Nuku Hiva	-	1	-	12
3/11	Taiohae, Nuku Hiva	-	5	-	83
	Total		59	7	1,778.5

1/ Dash in column 3 signifies no visual sweep of entire bay.

2/ Each bucket estimated weight 8 pounds.

Table 22.--Skipjack length frequency by sex, Charles H. Gilbert cruise 32

Date, 1957	Latitude and Longitude	Sex	Fork length range, in millimeters																															Total
			435-444	445-454	455-464	465-474	475-484	485-494	495-504	505-514	515-524	525-534	535-544	545-554	555-564	565-574	575-584	585-594	595-604	605-614	615-624	625-634	635-644	645-654	655-664	665-674	675-684	685-694	695-704	705-714	715-724	
1/26	09°33'S	M	-	-	-	-	-	-	-	-	1	-	2	4	6	6	2	2	1	-	-	1	-	-	-	-	-	-	-	-	-	25
	139°53'W	F	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	4
1/26	09°33'S	M	-	-	-	-	-	-	-	2	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
	139°55'W	F	-	-	1	-	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
1/27	10°02'S	M	1	1	1	2	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
	139°01'W	F	1	-	-	-	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
1/27	10°04'S	M	-	-	-	-	1	4	4	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
	138°56'W	F	-	-	-	2	5	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
1/27	10°27'S	M	-	-	2	2	4	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
	138°45'W	F	-	-	1	5	5	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
1/28	09°25'S	M	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
	138°54'W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/30	07°48'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	2	1	-	2	-	3	2	-	-	-	-	13
	140°25'W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	1	1	1	1	1	-	-	-	-	8
1/31	08°45'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	5	2	1	2	16
	140°06'W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	2	-	-	-	9
2/2	09°25'S	M	-	-	-	1	1	3	-	3	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
	140°08'W	F	-	-	-	4	4	3	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
2/2	09°38'S	M	-	-	-	3	2	2	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
	140°06'W	F	-	-	-	1	-	3	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
2/3	09°28'S	M	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	140°04'W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/4	09°21'S	M	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	139°57'W	F	-	1	-	-	2	1	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
2/7	08°57'S	M	-	1	-	-	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
	140°15'W	F	-	1	-	-	1	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
2/12	14°38'S	M	-	1	3	2	1	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
	146°07'W	F	-	2	7	1	1	1	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
2/12	14°41'S	M	-	1	2	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
	146°06'W	F	-	3	5	2	1	2	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
2/13	15°54'S	M	-	-	-	-	-	-	-	-	-	-	-	1	8	5	2	1	-	-	1	-	-	-	-	-	-	-	-	-	-	18
	146°22'W	F	-	-	-	-	-	-	-	-	-	-	1	1	-	2	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	7
2/24	09°50'S	M	3	6	2	1	3	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
	139°15'W	F	1	3	-	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
2/25	10°18'S	M	-	-	-	-	2	2	-	2	2	3	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
	138°46'W	F	-	-	-	-	1	1	1	2	4	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
2/26	09°41'S	M	-	-	-	1	2	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
	138°55'W	F	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
3/1	07°50'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2
	140°28'W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1

Table 22.--Skipjack length frequency by sex, Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Latitude and Longitude	Sex	Fork length range, in millimeters																																Total
			435-444	445-454	455-464	465-474	475-484	485-494	495-504	505-514	515-524	525-534	535-544	545-554	555-564	565-574	575-584	585-594	595-604	605-614	615-624	625-634	635-644	645-654	655-664	665-674	675-684	685-694	695-704	705-714	715-724	
3/1	07°57'S	M	-	-	-	-	-	2	4	1	2	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
	140°00'W	F	-	-	1	1	2	4	1	1	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
3/3	09°00'S	M	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	140°09'W	F	-	-	-	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
3/4	08°58'S	M	-	-	-	-	2	1	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
	140°21'W	F	-	-	-	1	1	4	6	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
3/4	08°49'S	M	-	-	2	2	-	3	5	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
	140°29'W	F	-	-	1	2	2	1	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
3/5	08°47'S	M	-	-	-	1	3	3	1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
	140°15'W	F	-	-	-	-	2	1	3	3	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
3/5	08°47'S	M	-	-	-	-	1	-	1	3	4	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
	140°17'W	F	-	-	-	-	-	2	3	3	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
3/5	08°47'S	M	-	-	-	-	-	-	-	1	4	6	4	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
	140°22'W	F	-	-	-	-	-	-	1	4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
3/5	08°53'S	M	-	-	-	-	-	-	-	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
	140°20'W	F	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
3/6	09°34'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	139°30'W	F	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
3/6	09°37'S	M	-	2	6	1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
	139°26'W	F	-	1	6	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
3/8	09°06'S	M	-	-	1	1	1	3	3	5	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
	140°19'W	F	-	-	-	1	1	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
3/8	09°08'S	M	-	-	-	-	3	2	3	1	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
	140°12'W	F	-	-	-	1	3	3	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
3/9	09°03'S	M	-	-	-	1	2	6	5	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
	140°10'W	F	-	-	-	2	1	2	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
	Total	M	4	12	19	19	38	41	39	35	27	13	14	12	19	16	4	5	3	-	4	2	-	2	-	6	5	5	2	1	2	349
		F	3	11	22	28	40	42	43	23	20	12	4	6	-	3	-	2	1	2	2	-	1	1	1	4	6	2	-	-	-	279

Table 23. --Yellowfin length frequency by sex, Charles H. Gilbert cruise 32

Date, 1957	Latitude and Longitude	Sex	Fork length range, in millimeters																												Total
			495-504	505-514	525-534	555-564	585-594	625-634	635-644	645-654	655-664	675-684	725-734	735-744	745-754	755-764	765-774	775-784	785-794	835-844	875-884	885-894	935-944	975-984	1055-1064	1065-1074	1155-1164	1255-1264			
1/26	09°33'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	1	1	1			6
	139°53'W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-
1/28	09°25'S	M	-	-	-	-	1	-	-	-	-	-	1	1	5	3	1	-	-	-	-	1	-	-	-	-	-	-			13
	138°54'W	F	-	-	-	-	-	-	-	-	-	-	-	2	1	1	3	1	2	1	-	-	-	1	-	-	-	-			12
2/12	14°38'S	M	-	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			3
	146°07'W	F	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			1
2/12	14°41'S	M	-	1	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			4
	146°06'W	F	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			3
	Total	M	-	1	1	1	1	-	1	1	1	1	1	1	5	3	1	-	-	-	1	1	1	-	1	1	1	1			26
		F	1	1	-	1	-	1	-	-	-	-	-	2	1	1	3	1	2	1	-	-	-	1	-	-	-	-			16

Table 24.--Marquesan sardine length frequency by sex, Charles H. Gilbert cruise 32

Date, 1957	Position		Sex	Fork length range, in millimeters										Total
	Latitude	Longitude		45-54	55-64	65-74	75-84	85-94	95-104	105-114	115-124	125-134	135-144	
1/24	08°56'S	140°05'W	M	-	-	8	47	12	2	3	-	-	-	72
			F	-	-	-	-	2	9	31	8	2	-	52
1/27	09°48'S	139°10'W	M	-	1	10	1	1	7	2	-	-	-	22
			F	-	-	-	1	-	4	2	3	-	-	10
			?	3	13	19	-	-	-	-	-	-	-	35
2/1	08°56'S	140°15'W	M	-	-	-	8	26	27	6	-	-	-	67
			F	-	-	1	3	7	13	6	-	1	-	31
			?	-	1	3	-	-	-	-	-	-	-	4
2/4	08°54'S	140°01'W	M	-	-	1	4	13	18	5	-	-	-	41
			F	-	-	-	1	6	2	3	4	-	-	16
			?	-	-	-	1	-	-	-	-	-	-	1
2/6	08°56'S	140°05'W	M	-	-	4	10	10	1	-	-	-	-	25
			F	-	-	2	7	4	-	-	-	-	-	13
			?	-	-	4	-	-	-	-	-	-	-	4
2/7	08°56'S	140°05'W	M	-	-	2	14	25	18	8	-	-	-	67
			F	-	-	-	11	24	15	23	2	-	-	75
2/7	08°57'S	140°09'W	M	-	-	-	7	10	-	-	-	-	-	17
			F	-	-	1	9	-	-	-	2	2	-	14
2/8	08°50'S	140°04'W	M	-	-	1	12	5	-	-	-	-	-	18
			F	-	-	4	11	15	1	5	5	5	1	47
			?	-	-	2	-	-	-	-	-	-	-	2
2/8	08°51'S	140°02'W	M	-	-	1	10	5	11	-	-	-	-	27
			F	-	-	3	22	5	6	6	-	1	-	43
2/22	08°56'S	140°05'W	M	-	-	-	2	10	7	10	2	-	-	31
			F	-	-	-	2	3	4	3	10	5	-	27
2/25	09°54'S	139°05'W	M	-	-	3	3	-	5	1	-	-	-	12
			F	-	-	1	4	4	2	1	-	-	-	12
2/25	09°54'S	139°04'W	M	-	-	-	1	4	8	2	-	-	-	15
			F	-	-	-	-	1	3	1	-	-	-	5
2/28	08°56'S	140°05'W	M	-	-	-	3	8	8	1	-	-	-	20
			F	-	-	-	-	7	8	2	-	-	-	17
3/2	08°56'S	140°05'W	M	-	-	-	3	8	4	2	-	-	-	17
			F	-	-	-	1	7	4	1	-	-	-	13
			?	-	-	-	1	-	-	-	-	-	-	1
3/4	08°56'S	140°05'W	M	-	-	-	-	2	4	1	-	-	-	7
			F	-	-	-	-	4	5	7	2	-	-	18
3/5	08°48'S	140°10'W	M	-	-	1	7	1	1	-	-	-	-	10
			F	-	1	3	5	-	2	-	-	-	-	11
			?	-	4	10	11	8	-	-	-	-	-	33
3/6	08°56'S	140°05'W	M	-	-	-	6	8	2	1	-	-	-	17
			F	-	-	-	7	9	-	3	3	-	-	22
			?	-	-	-	-	1	-	-	-	-	-	1
3/8	08°56'S	140°05'W	M	-	-	-	5	11	1	-	-	-	-	17
			F	-	-	-	5	8	7	-	-	-	-	20
3/9	08°56'S	140°05'W	M	-	-	-	-	10	2	1	-	-	-	13
			F	-	-	-	1	8	4	-	1	-	-	14
3/11	08°56'S	140°05'W	M	-	-	-	6	30	13	4	-	-	-	53
			F	-	-	-	7	25	18	5	2	1	-	58
	Total		M	-	1	31	149	199	139	47	2	-	-	568
			F	-	1	15	97	139	107	99	42	17	1	518
			?	3	18	38	13	9	-	-	-	-	-	81
	Grand total			3	20	84	259	347	246	146	44	17	1	1167

Table 25. --Yellowfin length frequency by sex, John R. Manning cruise 34

| Date, 1957 | Latitude and Longitude | Sex | Fork length range, in millimeters | | |

Table 25.--Yellowfin length frequency by sex, John R. Manning cruise 34 (cont'd)

| Date, 1957 | Latitude and Longitude | Sex | Fork length range, in millimeters | | |

Table 25.--Yellowfin length frequency by sex, John R. Manning cruise 34 (cont'd)

| Date, 1957 | Latitude and Longitude | Sex | Fork length range, in millimeters | | |

Table 26. --Bigeye length frequency by sex, John R. Manning cruise 34

Date, 1957	Position		Sex	Fork length range, in millimeters																																					Total
	Latitude	Longitude		1285-1294	1295-1304	1325-1334	1345-1354	1385-1394	1415-1424	1435-1444	1445-1454	1455-1464	1465-1474	1475-1484	1485-1494	1495-1504	1505-1514	1515-1524	1535-1544	1545-1554	1555-1564	1565-1574	1575-1584	1595-1604	1605-1614	1615-1624	1625-1634	1635-1644	1645-1654	1675-1684	1695-1704	1715-1724	1725-1734	1735-1744	1745-1754	2005-2014	
1/17	03°34'N	132°06'W	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	3
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
1/19	01°34'N	132°09'W	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
1/20	00°07'S	132°19'W	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/21	01°54'S	132°07'W	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/22	03°30'S	132°04'W	M	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	1	1	-	-	-	-	-	-	-	-	6
			F	-	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1	-	-	-	1	1	-	1	1	-	9
1/23	04°46'S	132°10'W	M	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2
			F	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
1/24	06°22'S	132°16'W	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
1/25	07°50'S	132°02'W	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
			F	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
1/26	09°38'S	132°03'W	M	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
			F	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
1/29	14°02'S	132°03'W	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/1	10°47'S	138°38'W	M	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
			F	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
2/3	08°34'S	138°34'W	M	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/5	07°31'S	139°36'W	M	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/10	08°24'S	140°38'W	M	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/26	05°52'S	148°22'W	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 26.--Bigeye length frequency by sex, John R. Manning cruise 34 (cont'd)

| Date, 1957 | Position | | Sex | Fork length range, in millimeters | | |

Table 27.--Albacore length frequency by sex, John R. Manning cruise 34

Date, 1957	Position		Sex	Fork length range, in millimeters								Total
	Latitude	Longitude		905-914	915-924	925-934	935-944	945-954	965-974	995-1004	1055-1064	
1/27	10°58'S	132°04'W	M	-	-	-	-	1	-	-	-	1
			F	-	-	-	-	-	-	-	-	-
1/28	12°30'S	132°07'W	M	-	-	-	-	-	-	-	-	-
			F	-	-	-	1	-	-	-	-	1
1/29	14°02'S	132°03'W	M	-	-	-	-	-	1	-	-	1
			F	-	-	1	-	1	-	-	-	2
2/3	08°34'S	138°34'W	M	-	-	-	-	-	-	-	-	-
			F	-	-	-	-	1	-	-	-	1
2/7	09°30'S	139°38'W	M	-	-	-	-	-	-	-	-	-
			F	-	1	2	-	-	-	-	-	3
2/8	10°22'S	139°40'W	M	-	-	-	-	-	-	-	-	-
			F	1	-	1	-	-	-	-	-	2
2/9	09°14'S	140°34'W	M	-	-	-	-	-	-	-	1	1
			F	-	-	-	-	-	-	-	-	-
2/10	08°24'S	140°38'W	M	-	-	-	-	-	-	1	-	1
			F	-	-	-	-	-	-	-	-	-
2/20	15°05'S	149°52'W	M	-	-	-	-	-	1	-	-	1
			F	-	-	-	-	-	-	-	-	-
2/21	13°24'S	149°37'W	M	-	-	-	-	1	1	-	-	2
			F	-	-	-	-	-	-	-	-	-
2/22	12°06'S	149°18'W	M	-	-	-	-	-	-	-	-	-
			F	-	-	-	1	-	-	-	-	1
2/24	09°06'S	148°40'W	M	-	-	-	1	-	-	-	-	1
			F	-	-	-	-	-	-	-	-	-
2/25	07°18'S	148°29'W	M	-	-	-	-	-	-	-	-	-
			F	-	-	1	-	-	-	-	-	1
	Total		M	-	-	-	1	2	3	1	1	8
			F	1	1	5	2	2	-	-	-	11
	Grand total			1	1	5	3	4	3	1	1	19

Table 28. --Skipjack length frequency by sex, John R. Manning cruise 34

Date, 1957	Latitude and Longitude	Sex	Fork length range, in millimeters																Total
			466-474	535-544	545-554	605-614	665-674	685-694	705-714	725-734	735-744	745-754	755-764	765-774	775-784	785-794	795-804	815-824	
1/22	03°29'S	M	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
	132°04'W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1/23	04°46'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	132°09'W	F	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
1/24	06°22'S	M	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	2
	132°15'W	F	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
1/25	07°49'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	132°02'W	F	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
1/26	09°37'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	132°03'W	F	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
1/27	10°58'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	132°03' W	F	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
1/29	14°02'S	M	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
	132°03' W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/1	10°47'S	M	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
	138°38' W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/3	08°33'S	M	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	2
	138°34' W	F	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
2/4	07°35'S	M	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	2
	138°38' W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/5	07°31'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	139°36' W	F	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
2/6	08°35'S	M	-	-	-	-	1	-	-	-	1	1	-	-	1	-	-	-	4
	139°39' W	F	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
2/7	09°29'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
	139°38' W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/8	10°22'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	139°40' W	F	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
2/10	08°23'S	M	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	140°38' W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/21	13°24'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
	149°37' W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/23	10°35'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	148°57' W	F	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
2/25	07°18'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
	148°29' W	F	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	2
2/26	05°51'S	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	148°21' W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2/28	02°52'S	M	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	2
	148°16' W	F	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
3/2	00°06'N	M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
	147°58' W	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	M	-	-	1	-	1	1	-	-	2	4	1	2	4	2	3	2	23
		F	1	1	-	1	-	-	1	1	2	1	2	1	1	-	-	-	12
	Grand total		1	1	1	1	1	1	1	1	4	5	3	3	5	2	3	2	35

Table 29.--Record of daily sightings of bird flocks, scattered birds, and tuna schools, Hugh M. Smith cruise 38

Date, 1957	Noon position		Flocks											Scattered birds								Tuna schools		
				Size			Composition																		
	Latitude	Longitude	Total number	< 10	10 - 50	> 50	Terns	Boobies	Bo'sun birds	Frigate birds	Petrels or shearwaters	Other		Albatross	Petrels or shearwaters	Boobies	Terns	Frigate birds	Bo'sun birds	Storm petrels	Other	Yellowfin	Skipjack	Unidentified
1/13	17°26'N	153°18'W	1	-	-	1	1	1	-	1	1	-		-	-	-	-	-	-	-	-	-	1	-
1/14	15°33'N	150°07'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	1	-	-	-	-
1/15	13°42'N	146°52'W	2	-	1	1	2	-	-	-	1	-		-	-	-	-	-	-	3	-	-	-	2
1/16	11°53'N	144°00'W	2	-	-	2	2	-	-	-	2	-		-	12	-	4	-	4	17	-	-	-	2
1/17	10°13'N	141°02'W	-	-	-	-	-	-	-	-	-	-		-	-	-	1	-	-	14	-	-	-	-
1/18	08°32'N	138°04'W	-	-	-	-	-	-	-	-	-	-		-	-	-	5	-	1	13	-	-	-	-
1/19	06°40'N	134°38'W	-	-	-	-	-	-	-	-	-	-		-	10	-	-	-	2	17	-	-	-	-
1/20	04°32'N	131°52'W	1	-	1	-	-	-	-	-	1	-		-	19	-	11	-	-	7	-	-	-	-
1/21	02°44'N	128°50'W	-	-	-	-	-	-	-	-	-	-		-	8	-	-	-	-	1	-	-	-	-
1/22	00°34'N	125°50'W	-	-	-	-	-	-	-	-	-	-		-	1	-	-	-	-	4	-	-	-	-
1/23	00°03'N	122°54'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	1	3	-	-	-	-
1/24	00°24'N	119°50'W	-	-	-	-	-	-	-	-	-	-		-	9	-	-	-	-	4	-	-	-	-
1/25	00°15'S	116°49'W	-	-	-	-	-	-	-	-	-	-		-	1	-	-	-	-	2	-	-	-	-
1/26	00°08'S	113°27'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	1	-	-	-	-
1/27	00°12'S	110°12'W	-	-	-	-	-	-	-	-	-	-		-	1	-	-	-	-	5	-	-	1	-
1/28	03°24'S	110°01'W	-	-	-	-	-	-	-	-	-	-		-	1	-	2	-	-	2	-	-	-	-
1/29	06°58'S	110°01'W	-	-	-	-	-	-	-	-	-	-		-	2	-	-	-	-	8	-	-	-	-
1/30	10°10'S	109°59'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	1	7	-	-	-	-
1/31	13°06'S	110°03'W	-	-	-	-	-	-	-	-	-	-		-	-	-	4	-	-	1	4	-	1	-
2/1	13°32'S	110°11'W	1	1	-	-	-	-	1	-	-	-		-	-	-	1	-	1	1	-	-	2	-
2/21	10°39'S	122°29'W	-	-	-	-	-	-	-	-	-	-		-	-	-	2	-	-	-	-	-	-	-
2/22	07°43'S	125°36'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	2	-	-	-	-
2/23	05°20'S	128°23'W	3	-	3	-	3	-	-	-	-	-		-	-	-	1	-	4	1	-	-	-	3
2/24	01°52'S	129°37'W	1	1	-	-	-	-	-	-	1	-		-	1	-	-	1	-	2	-	-	1	1
2/25	01°35'S	129°51'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	5	-	-	1	-
2/26	04°59'S	130°06'W	3	-	1	2	3	-	1	-	1	-		-	-	-	-	-	2	2	-	-	1	1
2/27	08°29'S	130°02'W	1	-	-	1	1	-	1	1	1	-		1	1	-	5	-	1	6	1	-	1	-
2/28	11°56'S	129°59'W	4	-	-	4	3	-	-	2	1	-		3	2	-	-	-	-	4	1	-	2	2
3/1	15°22'S	129°53'W	4	1	1	2	4	-	1	2	2	1		-	11	-	1	-	-	2	-	-	1	3
3/2	18°08'S	130°40'W	-	-	-	-	-	-	-	-	-	-		-	5	1	-	-	3	1	-	-	1	-
3/3	17°50'S	134°01'W	-	-	-	-	-	-	-	-	-	-		-	7	-	-	-	-	-	-	-	1	-
3/4	17°37'S	136°42'W	-	-	-	-	-	-	-	-	-	-		-	7	-	1	-	1	2	-	-	-	-
3/5	17°43'S	139°54'W	1	-	-	1	1	-	-	1	1	-		-	3	1	3	-	10	-	-	-	1	-
3/6	17°59'S	140°58'W	-	-	-	-	-	-	-	-	-	-		-	-	2	5	1	3	-	-	-	-	-
3/7	18°03'S	144°13'W	-	-	-	-	-	-	-	-	-	-		-	3	-	2	-	-	-	-	-	-	-
3/8	17°57'S	147°36'W	-	-	-	-	-	-	-	-	-	-		-	4	9	4	1	-	-	-	-	-	-
3/14	15°04'S	146°44'W	5	-	2	3	5	1	-	-	2	-		-	13	13	37	-	-	-	-	-	-	4
3/15	12°28'S	144°59'W	1	-	-	1	1	-	1	-	1	-		-	5	-	7	-	-	2	-	1 1/	2 1/	-
3/16	09°23'S	145°09'W	2	1	-	1	1	-	1	-	1	-		-	4	3	-	-	1	6	-	1	-	-
3/17	06°19'S	145°01'W	2	-	2	-	2	1	-	-	-	1		-	12	1	13	-	-	5	-	-	-	1

1/ One mixed YF-SJ school.

Table 29.--Record of daily sightings of bird flocks, scattered birds, and tuna schools, Hugh M. Smith cruise 38 (cont'd)

Date, 1957	Noon position		Flocks											Scattered birds								Tuna schools		
			Total number	Size			Composition																	
	Latitude	Longitude		< 10	10 - 50	> 50	Terns	Boobies	Bo'sun birds	Frigate birds	Petrels or shearwaters	Other	Albatross	Petrels or shearwaters	Boobies	Terns	Frigate birds	Bo'sun birds	Storm petrels	Other	Yellowfin	Skipjack	Unidentified
3/18	03°16'S	144°57'W	-	-	-	-	-	-	-	-	-	-	-	4	1	-	-	-	-	-	-	-	-
3/19	00°42'S	144°58'W	5	-	1	4	5	1	1	-	3	-	-	-	-	2	-	-	-	-	-	3	1
3/20	02°02'N	145°05'W	2	-	2	-	2	-	1	-	1	-	-	4	3	-	-	-	-	-	-	-	2
3/21	05°16'N	147°11'W	1	-	-	1	1	-	-	1	1	-	-	26	8	17	-	1	9	-	-	-	1
3/22	08°20'N	149°17'W	1	-	1	-	1	-	-	-	1	-	-	10	7	2	-	-	1	-	-	-	1
3/23	11°23'N	151°26'W	-	-	-	-	-	-	-	-	-	-	-	16	-	4	-	-	4	-	-	-	-
3/24	14°37'N	153°36'W	-	-	-	-	-	-	-	-	-	-	-	11	2	3	-	-	5	-	-	-	-
	Total		43	4	15	24	38	4	8	8	22	2	4	213	51	137	3	36	170	6	2	20	24

Table 30.--Record of daily sightings of bird flocks, scattered birds, and tuna schools, Charles H. Gilbert cruise 32

Date, 1957	Noon position		Flocks											Scattered birds								Tuna schools		
				Size			Composition																		
	Latitude	Longitude	Total number	< 10	10 - 50	> 50	Terns	Boobies	Bo'sun birds	Frigate birds	Petrels or shearwaters	Other		Albatross	Petrels or shearwaters	Boobies	Terns	Frigate birds	Bo'sun birds	Storm petrels	Other	Yellowfin	Skipjack	Unidentified
1/12	21°44.0'N	158°03.5'W	1	-	1	-	1	-	-	-	-	-		1	4	6	-	-	-	-	-	-	-	1
1/13	20°20.5'N	156°52.0'W	-	-	-	-	-	-	-	-	-	-		-	36	-	-	-	-	-	4	-	-	-
1/14	17°19.0'N	155°09.0'W	-	-	-	-	-	-	-	-	-	-		-	-	-	4	-	-	-	-	-	-	-
1/15	14°30.0'N	153°08.0'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	5	-	-	-	-	-
1/16	11°31.0'N	151°31.5'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	5	-	-	-	-
1/17	08°41.0'N	150°00.0'W	-	-	-	-	-	-	-	-	-	-		-	9	-	-	-	5	7	-	-	-	-
1/18	05°59.0'N	147°57.0'W	2	-	2	-	1	-	-	1	2	-		-	20	-	-	-	-	13	-	-	1	1
1/19	03°14.0'N	146°03.5'W	-	-	-	-	-	-	-	-	-	-		-	37	-	6	6	-	11	-	-	-	-
1/20	00°28.5'S	144°37.0'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	1	-	-	-	-
1/21	02°36.5'S	142°55.0'W	-	-	-	-	-	-	-	-	-	-		-	19	-	10	1	1	26	-	-	-	-
1/22	05°46.0'S	141°33.5'W	-	-	-	-	-	-	-	-	-	-		-	20	-	16	12	5	20	-	-	-	-
1/23	08°57.5'S	140°05.0'W	1	-	-	-	-	-	-	-	-	-		-	19	3	9	5	3	1	-	-	-	1
1/25	09°27.0'S	140°05.5'W	12	-	2	10	12	2	2	6	12	-		-	-	-	-	-	-	-	-	-	8 2/	3
1/26	09°36.0'S	139°48.0'W	24	1	2	21	23	22	1	20	19	-		-	5	1	5	-	-	-	-	3 1/	17 2/	6
1/27	10°13.0'S	138°45.5'W	12	-	2	10	11	10	1	9	12	-		-	-	-	-	-	-	-	-	1	4	6
1/28	09°09.5'S	139°15.5'W	9	-	2	7	8	5	-	5	7	-		-	-	-	-	-	-	-	-	1 3/	2 4/	6
1/29	08°27.0'S	139°25.0'W	13	-	6	7	12	11	1	5	13	-		-	-	-	-	-	-	-	-	-	5	3
1/30	08°00.0'S	140°44.5'W	14	-	8	6	12	9	-	5	11	-		-	135	35	55	60	-	-	-	-	2	7
1/31	08°54.5'S	140°15.0'W	13	1	5	7	11	6	-	7	7	-		-	25	1	10	-	1	-	-	2 5/	3 6/	5
2/2	09°34.0'S	140°06.0'W	9	-	4	5	9	9	-	5	9	-		-	-	-	-	-	-	-	-	-	4	3
2/3	09°42.0'S	140°12.5'W	16	-	2	14	16	13	-	9	14	-		-	-	-	-	-	-	-	-	-	6	10
2/4	09°00.0'S	140°01.5'W	5	-	1	4	4	4	-	2	5	-		-	-	-	-	-	-	-	-	-	3	3
2/5	08°45.0'S	140°11.5'W	13	-	3	10	13	9	-	3	1	-		-	-	-	-	-	-	-	-	2	1	6
2/6	Taiohae, Nuku Hiva		4	-	4	-	4	1	-	-	3	-		-	-	-	-	-	-	-	-	-	1	-
2/7	08°57.5'S	140°09.0'W	6	-	-	6	6	3	-	4	5	-		-	-	-	-	-	-	-	-	-	2	4
2/10	10°05.0'S	141°26.5'W	7	2	1	4	7	3	-	4	5	-		-	-	-	-	-	-	-	-	-	-	4
2/11	12°12.0'S	144°01.0'W	3	1	2	-	3	1	-	3	3	-		-	32	-	74	-	5	-	-	-	-	1
2/12	14°38.0'S	146°07.5'W	7	-	2	5	7	5	-	6	7	-		-	10	-	33	-	-	-	-	4 7/	2 8/	1
2/13	16°02.0'S	146°36.5'W	12	-	6	6	12	1	-	1	9	-		-	12	-	12	-	-	-	-	-	1	7
2/18	Papeete, Tahiti		-	-	-	-	-	-	-	-	-	-		-	2	13	7	-	-	-	-	-	-	-
2/19	15°23.5'S	147°23.5'W	10	-	2	8	10	7	-	5	10	-		-	-	-	-	-	-	-	-	1 9/	3 10/	7
2/20	13°28.5'S	144°40.5'W	-	-	-	-	-	-	-	-	-	-		-	-	-	-	1	-	-	-	1	-	-
2/21	11°20.0'S	142°15.0'W	-	-	-	-	-	-	-	-	-	-		-	4	-	-	-	-	1	-	-	-	-
2/22	09°04.0'S	140°14.0'W	6	-	-	6	6	4	-	1	3	-		-	11	9	16	-	-	-	-	-	-	6
2/23	09°27.0'S	140°04.5'W	16	-	4	12	16	14	-	6	16	-		-	-	-	-	-	-	-	-	-	5	8
2/24	09°41.0'S	139°35.0'W	21	-	6	15	21	17	-	2	19	-		-	-	-	-	-	-	-	-	-	8	10
2/25	10°05.0'S	139°03.0'W	5	-	4	1	5	-	-	1	2	-		-	-	-	-	-	-	-	-	-	-	1
2/26	09°51.0'S	138°40.0'W	15	-	4	11	15	10	-	6	15	-		-	-	-	-	-	-	-	-	3	4	6
2/27	09°48.5'S	139°01.5'W	2	-	2	-	2	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1
2/28	08°35.0'S	140°28.0'W	19	-	7	12	19	17	-	10	15	-		-	-	-	-	-	-	-	-	2	4	9

Table 30.--Record of daily sightings of bird flocks, scattered birds, and tuna schools, Charles H. Gilbert cruise 32 (cont'd)

Date, 1957	Noon position		Flocks										Scattered birds								Tuna schools		
				Size			Composition																
	Latitude	Longitude	Total number	< 10	10 - 50	> 50	Terns	Boobies	Bo'sun birds	Frigate birds	Petrels or shearwaters	Other	Albatross	Petrels or shearwaters	Boobies	Terns	Frigate birds	Bo'sun birds	Storm petrels	Other	Yellowfin	Skipjack	Unidentified
3/1	08°02.5'S	140°18.0'W	14	-	2	12	14	12	-	7	10	-	-	-	-	-	-	-	-	-	2	2	11
3/3	09°09.0'S	140°05.5'W	10	-	2	8	10	10	-	4	10	-	-	-	-	-	-	-	-	-	-	2	7
3/4	08°58.0'S	140°21.0'W	7	-	2	5	7	5	1	4	6	-	-	-	-	-	-	-	-	-	-	2	3
3/5	08°45.0'S	140°14.0'W	20	-	4	16	20	18	-	7	18	-	-	-	-	-	-	-	-	-	2	10	8
3/6	09°33.5'S	139°29.5'W	15	-	5	10	15	14	-	7	13	-	-	-	-	-	-	-	-	-	-	6	8
3/7	09°25.0'S	139°35.5'W	11	-	5	6	11	7	-	4	9	-	-	35	9	15	4	-	-	-	-	1	9
3/8	09°40.0'S	140°23.0'W	5	-	2	3	5	4	-	3	4	-	-	5	-	10	-	-	-	-	-	2	4
3/9	09°00.0'S	140°08.0'W	1	-	-	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	1	-
3/12	08°52.0'S	140°15.5'W	10	1	-	9	9	9	-	6	9	-	-	-	-	-	-	-	-	-	-	3	5
3/13	05°48.0'S	141°53.0'W	5	-	2	3	5	5	-	1	5	-	-	5	1	24	-	1	-	-	-	-	-
3/14	02°45.0'S	143°34.0'W	1	-	-	1	1	-	-	-	-	-	-	11	-	19	-	-	-	-	-	-	1
3/15	00°07.5'N	145°14.0'W	1	-	-	1	1	1	-	-	1	-	-	38	1	7	-	1	14	-	-	-	1
3/16	03°24.0'N	146°58.5'W	2	-	2	-	2	1	-	-	1	-	-	27	3	2	-	-	3	-	-	1	-
3/17	06°30.0'N	148°21.0'W	-	-	-	-	-	-	-	-	-	-	-	28	11	-	-	2	-	-	-	-	-
3/18	09°06.5'N	150°12.0'W	1	-	1	-	-	-	-	-	1	-	-	36	4	-	-	-	-	-	-	-	1
3/19	11°54.5'N	151°54.5'W	-	-	-	-	-	-	-	-	-	-	-	38	2	1	-	-	-	-	-	-	-
3/20	14°52.5'N	153°32.0'W	1	-	1	-	-	-	-	-	1	-	-	25	4	2	-	-	-	-	-	-	-
3/21	17°50.5'N	155°39.5'W	2	-	-	2	2	2	-	1	1	1	-	50	6	49	-	-	-	-	-	-	1
3/22	20°42.5'N	157°34.5'W	1	-	-	1	1	-	-	-	1	-	10	56	2	32	-	-	-	-	-	-	-
	Total		384	6	112	265	369	272	7	170	315	1	11	754	111	418	89	29	102	4	24	116	185

1/ All 3 schools mixed YF and SJ.

2/ Three schools mixed YF and SJ.

3/ Mixed SJ and YF school.

4/ One mixed SJ and YF school.

5/ One mixed YF and SJ school.

6/ One mixed SJ and YF school.

7/ Two mixed schools.

8/ Mixed schools.

9/ Mixed school.

10/ One mixed school.

Table 31.--Record of daily sightings of bird flocks, scattered birds, and tuna schools, John R. Manning cruise 34

Date, 1957	Noon position		Flocks											Scattered birds								Tuna schools		
			Total number	Size			Composition																	
	Latitude	Longitude		< 10	10 - 50	> 50	Terns	Boobies	Bo'sun birds	Frigate birds	Petrels or shearwaters	Other	Albatross	Petrels or shearwaters	Boobies	Terns	Frigate birds	Bo'sun birds	Storm petrels	Other	Yellowfin	Skipjack	Unidentified
1/5	19°58.5'N	156°26.5'W	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
1/6	18°14.0'N	154°34.5'W	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
1/9	14°41.0'N	148°36.0'W	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	1	3	-	-	-	-
1/10	13°35.0'N	146°20.0'W	1	1	-	-	1	-	1	-	-	-	-	6	1	-	-	-	3	-	-	-	-
1/11	12°16.0'N	144°12.0'W	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	1	-	-	-	-
1/12	10°48.0'N	141°44.0'W	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	2	11	-	-	-	-
1/13	09°05.0'N	139°24.5'W	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	1	26	-	-	-	-
1/14	07°35.0'N	136°43.5'W	1	-	-	1	1	-	-	-	1	-	-	4	-	4	-	-	7	-	-	-	1
1/15	05°39.5'N	134°12.5'W	2	-	-	2	2	-	-	-	2	-	-	7	-	-	-	-	6	-	2	-	-
1/16	04°29.0'N	132°17.0'W	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
1/17	03°32.0'N	132°05.0'W	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-
1/19	01°34.0'N	132°09.0'W	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
1/20	00°07.0'S	132°19.0'W	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
1/23	04°46.5'S	132°08.0'W	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
1/25	07°51.0'S	132°00.0'W	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-
1/26	09°37.5'S	132°03.0'W	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
1/27	10°58.0'S	132°03.5'W	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	-	-	-	-	-
1/28	12°29.5'S	132°07.0'W	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-
1/29	14°02.0'S	132°03.0'W	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
1/30	12°56.5'S	134°19.0'W	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	3	-	-	-	-
1/31	11°31.5'S	137°20.0'W	13	-	5	8	13	-	-	4	11	1	-	16	-	7	-	-	-	-	-	2	10
2/1	10°47.0'S	138°38.5'W	3	1	1	1	2	2	-	1	2	-	-	9	12	6	2	-	-	-	-	1	-
2/2	09°31.0'S	138°39.0'W	-	-	-	-	-	-	-	-	-	-	-	4	2	9	-	2	-	-	-	-	-
2/3	08°33.5'S	138°34.0'W	1	-	-	1	1	1	-	-	-	-	-	1	13	21	-	1	2	-	-	1	1
2/4	07°35.0'S	138°38.5'W	1	-	1	-	1	-	-	-	-	-	-	2	-	20	6	2	1	-	-	-	2
2/5	07°31.0'S	139°36.0'W	6	-	1	5	6	4	1	3	3	-	-	2	-	14	1	-	-	-	-	-	5
2/6	08°25.5'S	139°39.0'W	7	-	3	4	7	7	-	2	5	-	-	4	4	23	1	-	-	-	-	-	7
2/7	09°29.5'S	139°38.5'W	1	-	1	-	1	-	-	-	-	-	-	2	1	28	3	-	-	-	-	-	-
2/8	10°22.5'S	139°40.5'W	1	-	1	-	1	-	-	-	1	-	-	1	1	5	-	1	-	-	-	-	1
2/9	09°14.5'S	140°33.5'W	1	-	1	-	1	1	-	1	-	-	-	1	4	21	-	-	-	-	-	-	1
2/10	08°24.0'S	140°36.5'W	3	-	1	2	3	-	-	2	2	-	-	6	-	15	-	-	-	-	-	6	1
2/11	10°26.0'S	142°22.0'W	-	-	-	-	-	-	-	-	-	-	-	2	-	2	1	-	-	-	-	-	-
2/12	12°43.0'S	144°51.5'W	3	-	3	-	3	1	-	-	-	-	-	5	1	15	-	-	-	-	-	-	-
2/13	15°22.0'S	147°06.5'W	4	1	2	1	3	1	1	-	1	-	-	5	10	9	-	1	-	-	-	-	4
2/14	Papeete, Tahiti		1	-	-	1	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
2/18	Papeete, Tahiti		1	-	1	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-
2/19	16°34.5'S	150°04.5'W	-	-	-	-	-	-	-	-	-	-	-	5	19	2	1	-	-	-	-	-	-
2/20	15°05.0'S	149°52.5'W	1	-	1	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
2/21	13°24.0'S	149°37.0'W	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-	-	-
2/22	12°05.5'S	149°18.5'W	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-

Table 31.--Record of daily sightings of bird flocks, scattered birds, and tuna schools, John R. Manning cruise 34 (cont'd)

Date, 1957	Noon position		Flocks										Scattered birds							Tuna schools		
			Total number	Size			Composition															
	Latitude	Longitude		< 10	10 - 50	> 50	Terns	Boobies	Bo'sun birds	Frigate birds	Petrels or shearwaters	Other	Albatross	Petrels or shearwaters	Boobies	Terns	Frigate birds	Bo'sun birds	Storm petrels	Other	Yellowfin	Skipjack	Unidentified
2/23	10°35.5'S	148°57.0'W	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	1	-	-	-	-
2/24	09°05.5'S	148°40.5'W	1	-	1	-	1	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-
2/28	02°52.5'S	148°16.5'W	2	-	2	-	2	2	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-
3/1	01°26.0'S	147°54.0'W	1	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3/2	00°06.5'N	147°58.0'W	-	-	-	-	-	-	-	-	-	-	-	3	1	1	-	-	-	-	-	-	-
3/3	01°07.5'N	148°05.5'W	-	-	-	-	-	-	-	-	-	-	-	2	6	-	-	-	-	-	-	-	-
3/4	02°00.0'N	148°06.0'W	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
3/5	03°01.0'N	148°07.0'W	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-
3/6	05°18.0'N	149°17.5'W	-	-	-	-	-	-	-	-	-	-	-	5	2	6	-	1	-	-	-	-	-
3/7	07°40.0'N	150°30.0'W	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	1	-	-	-	-	-
3/8	10°15.0'N	152°04.5'W	-	-	-	-	-	-	-	-	-	-	1	8	-	1	-	2	-	-	-	-	-
3/9	12°52.0'N	153°37.5'W	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
3/10	15°19.0'N	155°00.0'W	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
3/11	18°08.0'N	156°20.5'W	1	-	1	-	1	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
3/12	21°10.0'N	157°53.0'W	1	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	1
		Total	57	3	28	26	54	22	3	14	31	3	8	187	79	227	15	19	64	-	2	11	35

Table 32.--Record of aquatic mammals sighted, Hugh M. Smith cruise 38, Charles H. Gilbert cruise 32, and John R. Manning cruise 34

Date, 1957	Time, LT	Position		Observation	Number
		Latitude	Longitude		
1/5	1740	19°18'N	156°01'W	Porpoise	15
1/17	1550	09°57'N	140°33'W	Whale	2
1/22	1432	00°21'N	125°32'W	Killer whale	10-40
1/26	1548	00°03'N	112°53'W	Killer whale	15
1/28	1020	00°12'S	110°21'W	Killer whale	5
1/30	1740	05°01'S	140°46'W	Porpoise	50
2/1	0910	10°47'S	138°38'W	Blackfish	20
2/2	0718	09°16'S	140°08'W	Killer whale	10
2/4	1210	08°59'S	140°01'W	Porpoise	10
2/6	1020	08°36'S	139°39'W	Blackfish	1
2/13	1250	15°26'S	147°12'W	Killer whale	15
2/13	1413	15°32'S	147°22'W	Killer whale	6
2/18	1740	17°21'S	149°39'W	Porpoise	3
2/22	0945	09°17'S	140°28'W	Porpoise	-
2/24	1235	01°46'S	129°38'W	Porpoise	100
2/24	1507	01°23'S	129°43'W	Porpoise	200
2/26	0625	10°28'S	135°36'W	Porpoise	6
2/26	1230	09°48'S	138°43'W	Porpoise	-
2/27	1530	09°47'S	139°12'W	Porpoise	-
2/28	0755	11°22'S	129°59'W	Sperm whale	3
2/28	0905	08°53'S	140°16'W	Whale	12
2/28	1505	12°24'S	130°02'W	Sperm whale	2
3/1	0845	01°26'S	147°54'W	Blackfish	12
3/1	1700	01°21'S	147°45'W	Humpback whale	3
3/1	1622	08°41'S	140°15'W	Porpoise	50
3/2	0658	18°00'S	130°06'W	Porpoise	200
3/5	1428	08°49'S	140°19'W	Porpoise	2
3/7	1545	09°04'S	139°57'W	Porpoise	10
3/7	1620	09°00'S	140°01'W	Porpoise	20
3/8	0915	09°13'S	140°08'W	Porpoise	5
3/12	1145	08°54'S	140°15'W	Porpoise	50
3/14	1336	02°35'S	143°40'W	Porpoise	75
3/15	0747	00°23'S	144°56'W	Porpoise	200
3/15	1415	00°26'N	145°24'W	Porpoise	1
3/15	1517	00°34'N	145°28'W	Porpoise	4
3/21	1750	05°59'N	147°44'W	Sperm whale	4
3/22	0807	07°49'N	148°56'W	Porpoise	50-100
3/22	1410	20°56'N	157°48'W	Whale	2

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ABSTRACT

Material for this report was furnished by 740 laboratory determinations, supplemented by field determinations, of the stage of maturity of ovaries of yellowfin tuna (*Neothunnus macropterus*) caught in the central equatorial Pacific. The usual length at sexual maturity of yellowfin in this area was found to be about 120 cm., although yellowfin as small as 70 cm. may be mature. Spawning was found to occur throughout the area surveyed (approximately 10° N. to 8° S. latitude, 120° W. to 180° longitude). Other studies have indicated that this area is but part of a band of yellowfin spawning grounds which covers the entire equatorial Pacific.

In this investigation, residual eggs in various stages of resorption were examined and described. Of 25 ovaries examined, 22 were found to be infested with unidentified nematodes ranging from 0.5 to 4 cm. in length. The number of worms in an ovary was usually less than five, and the infestation did not appear serious enough to affect the function of the ovary.

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YELLOWFIN TUNA SPAWNING IN THE CENTRAL EQUATORIAL PACIFIC

By Heeny S. H. Yuen and Fred C. June, *Fishery Research Biologists*

Because of the need for more knowledge about the spawning habits of the yellowfin tuna, *Neothunnus macropterus* (Temminck and Schlegel), a study was initiated as part of the tuna-research program of the Fish and Wildlife Service's Pacific Oceanic Fishery Investigations (POFI). Previous studies have been made of the reproduction of this species in various parts of the Pacific—by Schaefer and Marr (1948) and by Mead (1951) in Central American waters, by Bini (1952) off Chile and Peru, by June (1953) in Hawaiian waters, by Marr (1948) in the Marshall Islands, by Shimada (1951) near Kapingamarangi Island (1° N., 155° E.), and by Wade (1950 and 1951) in the Philippine Islands. This report is based on data from the central equatorial Pacific.

In this study we have investigated the time and place of spawning and the size of the fish at sexual maturity. Stages in the resorption of ripe eggs that were not spawned are incidentally described. The appearance of nematodes in the ovaries is noted, and its effect on egg production is discussed.

The research staff and vessel personnel assisted in the collection of ovaries and field data; Richard Shomura helped process the ovaries; Wilvan Van Campen translated the Japanese data; and Tamotsu Nakata prepared the illustrations.

SOURCES OF DATA

Ovaries collected on POFI exploratory-fishing trips from February 1950 to June 1954 provided most of the material for this study. The area of collection extended from 8° S. to 10° N. latitude and from 120° W. to 180° longitude.

The ovaries, preserved in 10-percent formalin, were brought back to the laboratory for examination. A record was kept of the date and the place of capture and the fork length of each fish. At the laboratory, the eggs were classified according to physical characteristics, as immature, intermediate, maturing, or ripe, as defined by June (1953). The "spawned out" category was omitted because of the difficulty in defining this class, but since only a fraction of the total number of eggs is emitted during spawning the remaining eggs permitted fish that had recently spawned to be classified into one of the four categories.

The principal features of the four categories are as follows:

Immature.—The eggs are translucent and range from 0.01 to 0.18 mm. in diameter.

Intermediate.—The largest eggs are semiopaque owing to the deposition of yolk granules; the diameters range from 0.18 to 0.40 mm.

Maturing.—The largest eggs are fully opaque, with diameters ranging roughly from 0.40 to 1.00 mm.

Ripe.—The largest eggs are transparent and loose, with diameters of about 0.76 to 1.23 mm. A prominent oil globule is present in each egg.

The ovaries collected after 1951 were subjected to an added procedure in the laboratory. They were examined for residual eggs—ripe eggs of a previous spawning that were not expelled. These eggs were classified as being in the early stages of resorption if they were still translucent and loose, and as being in the late stages if they were massed together and opaque or turning opaque.

The laboratory classifications of the ovaries are arranged in table 1 by month and locality of capture, by stage of maturity, and by length of fish.

TABLE 1.—*Data on 740 yellowfin tuna specimens from the central equatorial Pacific for which maturity determinations were made in the laboratory*

[Data are grouped by month of capture, by sections of 10 degrees of longitude (115° W. to 125° W., etc.), by stage of maturity, and by fish length]
[Im=immature, In=intermediate, M=mature, R=ripe]

Date	Position		Stage of maturity	Fish length
	Latitude	Longitude		
				Cm.
Jan. 26, 1951	5°37′ S.	154°56′ W.	M	113
Jan. 27, 1951	4°03′ S.	154°59′ W.	Im	104
Do	4°03′ S.	154°59′ W.	Im	96
Jan. 26, 1951	5°37′ S.	154°56′ W.	Im	78
Jan. 31, 1953	1°52′ N.	156°41′ W.	M	143
Do	1°52′ N.	156°41′ W.	In	146
Jan. 23, 1953	5°55′ N.	162°19′ W.	In	135
Do	5°55′ N.	162°19′ W.	In	132
Jan. 25, 1953	5°46′ N.	162°06′ W.	In	127
Do	5°46′ N.	162°06′ W.	Im	133
Do	5°46′ N.	162°06′ W.	Im	119
Jan. 21, 1951	0°01′ N.	158°17′ W.	Im	85
Jan. 19, 1951	8°30′ N.	158°21′ W.	Im	83
Jan. 27, 1953	5°53′ N.	161°15′ W.	Im	66
Jan. 26, 1951	3°07′ S.	171°05′ W.	In	98
Jan. 31, 1951	3°35′ S.	171°31′ W.	In	93
Jan. 26, 1951	3°07′ S.	171°05′ W.	Im	91
Do	3°07′ S.	171°05′ W.	Im	78
Jan. 29, 1951	4°26′ S.	171°15′ W.	Im	68
Feb. 11, 1953	0°09′ N.	150°00′ W.	M	149
Feb. 4, 1953	2°07′ N.	150°09′ W.	M	148
Feb. 4, 1952	0°02′ S.	154°57′ W.	M	147
Feb. 14, 1953	1°19′ S.	150°36′ W.	M	146
Feb. 12, 1953	1°13′ S.	150°11′ W.	M	145
Feb. 4, 1953	2°07′ N.	150°09′ W.	M	143
Feb. 12, 1953	1°13′ S.	150°11′ W.	M	143
Feb. 13, 1953	1°19′ S.	150°24′ W.	M	143
Feb. 4, 1953	2°07′ N.	150°09′ W.	M	139
Do	2°07′ N.	150°09′ W.	M	138
Feb. 12, 1953	1°13′ S.	150°11′ W.	M	138
Do	1°13′ S.	150°11′ W.	M	138
Feb. 13, 1953	1°19′ S.	150°24′ W.	M	137
Feb. 4, 1952	0°02′ S.	154°57′ W.	M	135
Feb. 3, 1953	2°54′ N.	150°19′ W.	In	152
Feb. 13, 1953	1°19′ S.	150°24′ W.	In	150
Feb. 4, 1952	0°02′ S.	154°57′ W.	In	148 or 140
Feb. 4, 1953	2°07′ N.	150°09′ W.	In	142
Feb. 13, 1953	1°19′ S.	150°24′ W.	In	142
Feb. 3, 1953	2°54′ N.	150°19′ W.	In	141
Feb. 10, 1953	1°04′ N.	151°05′ W.	In	141
Feb. 1, 1952	4°04′ N.	154°56′ W.	In	140
Feb. 17, 1953	2°56′ S.	150°08′ W.	In	138
Feb. 2, 1953	3°49′ N.	150°07′ W.	In	136
Feb. 1, 1952	4°04′ N.	154°56′ W.	In	129
Do	4°04′ N.	154°56′ W.	In	128
Feb. 2, 1953	3°49′ N.	150°07′ W.	Im	140
Feb. 19, 1953	6°08′ S.	150°09′ W.	Im	136
Feb. 1, 1952	4°04′ N.	154°56′ W.	Im	126
Do	4°04′ N.	154°56′ W.	Im	123
Do	4°04′ N.	154°56′ W.	Im	118
Do	4°04′ N.	154°56′ W.	Im	114
Do	4°04′ N.	154°56′ W.	Im	108
Feb. 5, 1952	1°20′ S.	155°06′ W.	M	148
Feb. 3, 1953	1°59′ N.	157°31′ W.	M	148
Feb. 5, 1952	1°20′ S.	155°06′ W.	M	147
Do	1°20′ S.	155°06′ W.	M	143
Feb. 3, 1952	1°20′ N.	155°03′ W.	M	142
Feb. 5, 1952	1°20′ S.	155°06′ W.	M	139
Feb. 3, 1953	1°59′ N.	157°31′ W.	M	139
Do	1°59′ N.	157°31′ W.	M	138
Do	1°59′ N.	157°31′ W.	M	134
Feb. 1, 1953	1°57′ N.	157°32′ W.	M	133
Feb. 3, 1953	1°59′ N.	157°31′ W.	M	130
Feb. 3, 1952	1°20′ N.	155°03′ W.	M	126
Feb. 3, 1953	1°59′ N.	157°31′ W.	M	124
Feb. 5, 1952	1°20′ S.	155°06′ W.	M	76
Feb. 1, 1953	1°57′ N.	157°32′ W.	In	142
Feb. 5, 1952	1°20′ S.	155°06′ W.	In	140
Feb. 3, 1953	1°59′ N.	157°31′ W.	In	140
Do	1°59′ N.	157°31′ W.	In	138
Feb. 5, 1952	1°20′ S.	155°06′ W.	In	137
Feb. 2, 1952	2°46′ N.	155°10′ W.	In	136
Feb. 3, 1953	1°59′ N.	157°31′ W.	In	136
Feb. 1, 1953	1°57′ N.	157°32′ W.	In	135
Feb. 3, 1953	1°59′ N.	157°31′ W.	In	135
Feb. 5, 1953	3°51′ N.	159°26′ W.	In	134
Feb. 3, 1953	1°59′ N.	157°31′ W.	In	133
Feb. 6, 1952	2°42′ N.	155°05′ W.	In	132
Feb. 1, 1953	1°57′ N.	157°32′ W.	In	131
Feb. 3, 1953	1°59′ N.	157°31′ W.	In	131
Feb. 6, 1952	2°42′ N.	155°05′ W.	In	130
Feb. 1, 1953	1°57′ N.	157°32′ W.	In	130
Feb. 3, 1953	1°59′ N.	157°31′ W.	In	130
Feb. 4, 1951	3°52′ N.	159°20′ W.	In	98
Feb. 5, 1953	3°51′ N.	159°26′ W.	Im	123
Feb. 3, 1953	1°59′ N.	157°31′ W.	Im	120
Feb. 11, 1951	0°22′ S.	160°01′ W.	Im	112
Feb. 10, 1951	0°22′ S.	160°01′ W.	Im	110
Feb. 5, 1953	3°51′ N.	159°26′ W.	Im	107
Do	3°51′ N.	159°26′ W.	Im	105
Feb. 3, 1953	1°59′ N.	157°31′ W.	Im	104
Feb. 16, 1951	0°22′ S.	160°01′ W.	Im	91
Feb. 21, 1951	5°53′ N.	162°05′ W.	Im	90
Feb. 11, 1951	0°22′ S.	160°01′ W.	Im	86
Feb. 21, 1951	5°53′ N.	162°05′ W.	Im	85
Feb. 4, 1951	3°52′ N.	159°20′ W.	Im	83
Feb. 21, 1951	5°53′ N.	162°05′ W.	Im	81
Feb. 16, 1951	1°51′ N.	157°20′ W.	Im	75
Feb. 17, 1951	3°52′ N.	159°20′ W.	Im	75
Feb. 19, 1951	3°52′ N.	159°20′ W.	Im	74
Feb. 22, 1951	5°53′ N.	162°05′ W.	Im	74
Feb. 12, 1951	3°52′ N.	159°20′ W.	Im	73
Feb. 13, 1951	1°51′ N.	157°20′ W.	Im	72
Feb. 8, 1950	4°30′ S.	172°10′ W.	M	120
Feb. 5, 1951	3°07′ S.	171°05′ W.	M	108
Feb. 11, 1950	2°50′ S.	171°40′ W.	Im	128
Feb. 10, 1952	3°15′ S.	171°30′ W.	Im	80
Feb. 8, 1950	4°30′ S.	172°10′ W.	Im	78
Feb. 5, 1951	3°07′ S.	171°05′ W.	Im	67
Feb. 18, 1952	0°02′ N.	179°48′ E.	M	144
Do	0°02′ N.	179°48′ E.	M	142
Feb. 20, 1952	2°39′ S.	179°54′ E.	M	140
Feb. 21, 1952	4°03′ S.	179°58′ E.	M	140
Feb. 20, 1952	2°39′ S.	179°54′ E.	M	138
Feb. 21, 1952	4°03′ S.	179°58′ E.	M	138
Feb. 16, 1952	3°00′ N.	180°00′	M	133
Feb. 19, 1952	1°18′ S.	180°00′	M	130
Do	1°18′ S.	180°00′	M	126
Feb. 23, 1952	6°47′ S.	179°59′ W.	In	134
Feb. 24, 1952	8°00′ S.	179°56′ E.	In	132
Mar. 15, 1953	1°00′ N.	140°00′ W.	R	146
Do	1°00′ N.	140°00′ W.	R	143
Mar. 12, 1953	1°51′ S.	140°11′ W.	R	141
Mar. 11, 1953	1°48′ S.	139°59′ W.	M	168
Mar. 15, 1953	1°00′ N.	140°00′ W.	M	153
Mar. 13, 1953	1°00′ S.	140°05′ W.	M	152
Mar. 15, 1953	1°00′ N.	140°00′ W.	M	149
Mar. 18, 1953	4°12′ N.	140°20′ W.	M	149
Mar. 14, 1953	0°09′ N.	139°47′ W.	M	148
Do	0°09′ N.	139°47′ W.	M	146
Mar. 8, 1953	6°16′ S.	141°32′ W.	M	145
Mar. 13, 1953	1°00′ S.	140°05′ W.	M	144
Do	1°00′ S.	140°05′ W.	M	144
Mar. 17, 1953	3°07′ N.	140°07′ W.	M	144
Mar. 16, 1953	2°12′ N.	140°18′ W.	M	143
Mar. 10, 1953	3°25′ S.	140°03′ W.	M	142
Mar. 14, 1953	0°09′ N.	139°47′ W.	M	142
Mar. 16, 1953	2°12′ N.	140°18′ W.	M	142
Mar. 17, 1953	3°07′ N.	140°07′ W.	M	142
Mar. 11, 1953	1°48′ S.	139°59′ W.	M	141
Mar. 13, 1953	1°00′ S.	140°05′ W.	M	141
Mar. 15, 1953	1°00′ N.	140°00′ W.	M	141
Do	1°00′ N.	140°00′ W.	M	140
Mar. 18, 1953	4°12′ N.	140°20′ W.	M	140
Do	4°12′ N.	140°20′ W.	M	140
Mar. 16, 1953	2°12′ N.	140°18′ W.	M	139
Do	2°12′ N.	140°18′ W.	M	139
Mar. 17, 1953	3°07′ N.	140°07′ W.	M	139
Mar. 14, 1953	0°09′ N.	139°47′ W.	M	136
Mar. 8, 1953	6°16′ S.	141°32′ W.	M	135
Mar. 13, 1953	1°00′ S.	140°05′ W.	M	135
Mar. 12, 1953	1°51′ S.	140°11′ W.	M	134
Mar. 17, 1953	3°07′ N.	140°07′ W.	M	134
Mar. 16, 1953	2°12′ N.	140°18′ W.	M	133
Mar. 18, 1953	4°12′ N.	140°20′ W.	In	143
Mar. 4, 1953	13°31′ S.	147°08′ W.	M	140
Do	13°31′ S.	147°08′ W.	Im	74
Mar. 12, 1952	4°10′ N.	168°30′ W.	R	145
Mar. 4, 1952	6°40′ S.	169°03′ W.	M	146
Do	6°40′ S.	169°03′ W.	M	143
Mar. 8, 1952	1°20′ S.	169°00′ W.	M	143
Mar. 5, 1952	5°18′ S.	169°03′ W.	M	142
Mar. 10, 1952	1°20′ N.	169°05′ W.	M	142
Mar. 9, 1952	0°01′ N.	169°04′ W.	M	141
Mar. 8, 1952	1°20′ S.	169°00′ W.	M	140
Mar. 11, 1952	2°50′ N.	169°07′ W.	M	140
Do	2°50′ N.	169°07′ W.	M	139
Mar. 4, 1952	6°40′ S.	169°03′ W.	M	135
Mar. 9, 1952	0°01′ N.	169°04′ W.	M	132
Mar. 7, 1952	2°43′ S.	169°00′ W.	M	130
Mar. 10, 1952	1°20′ N.	169°05′ W.	M	130
Mar. 11, 1952	2°50′ N.	169°07′ W.	In	141
Mar. 6, 1952	4°02′ S.	169°04′ W.	In	126
Apr. 30, 1951	1°51′ N.	157°20′ W.	M	110

TABLE 1.—*Data on 740 yellowfin tuna specimens from the central equatorial Pacific for which maturity determinations were made in the laboratory*—Continued

Date	Position		Stage of maturity	Fish length
	Latitude	Longitude		
				Cm.
Apr. 26, 1951	1°51′ N.	157°20′ W.	M	98
Apr. 27, 1951	1°51′ N.	157°20′ W.	In	108
Do	1°51′ N.	157°20′ W.	In	96
Apr. 30, 1951	1°51′ N.	157°20′ W.	In	96
Apr. 26, 1951	1°51′ N.	157°20′ W.	In	81
Apr. 18, 1951	5°53′ N.	162°05′ W.	Im	110
Apr. 16, 1951	5°53′ N.	162°05′ W.	Im	104
Apr. 11, 1951	0°22′ S.	160°01′ W.	Im	98
Apr. 13, 1951	5°53′ N.	162°05′ W.	Im	98
Apr. 16, 1950	5°53′ N.	162°05′ W.	Im	98
Apr. 15, 1951	5°53′ N.	162°05′ W.	Im	92
Apr. 16, 1951	5°53′ N.	162°05′ W.	Im	90
Apr. 24, 1951	1°51′ N.	157°20′ W.	Im	80
Apr. 26, 1951	1°51′ N.	157°20′ W.	Im	80
Apr. 27, 1951	1°51′ N.	157°20′ W.	Im	80
Apr. 26, 1951	1°51′ N.	157°20′ W.	Im	75
Apr. 13, 1951	5°53′ N.	162°05′ W.	Im	70
May 29, 1952	7°09′ N.	119°00′ W.	R	148
May 31, 1952	4°18′ N.	119°35′ W.	M	146
Do	4°18′ N.	119°35′ W.	M	146
Do	4°18′ N.	119°35′ W.	M	135
May 23, 1954	4°55′ N.	161°19′ W.	M	151
May 28, 1954	4°02′ N.	159°34′ W.	M	146
Do	4°02′ N.	159°34′ W.	M	146
Do	4°02′ N.	159°34′ W.	M	143
May 23, 1954	4°55′ N.	161°19′ W.	M	140
May 30, 1954	3°58′ N.	159°04′ W.	M	140
May 7, 1951	3°52′ N.	159°20′ W.	M	136
May 13, 1950	1°51′ N.	157°20′ W.	M	136
May 25, 1954	4°45′ N.	160°11′ W.	M	134
May 23, 1954	4°55′ N.	161°19′ W.	M	133
May 26, 1954	4°52′ N.	159°35′ W.	M	133
May 18, 1954	6°02′ N.	162°28′ W.	M	130
May 22, 1954	5°26′ N.	161°37′ W.	M	129
May 23, 1954	4°55′ N.	161°19′ W.	M	129
May 31, 1951	6°25′ N.	162°26′ W.	M	127
May 24, 1954	4°56′ N.	160°32′ W.	M	123
May 25, 1954	4°45′ N.	160°11′ W.	M	122
May 27, 1954	4°17′ N.	160°28′ W.	M	121
May 28, 1954	4°02′ N.	159°34′ W.	M	117
May 27, 1954	4°17′ N.	160°28′ W.	M	114
May 31, 1951	6°25′ N.	162°26′ W.	M	106
Do	6°25′ N.	162°26′ W.	M	101
Do	6°25′ N.	162°26′ W.	M	100
Do	6°25′ N.	162°26′ W.	M	92
Do	6°25′ N.	126°26′ W.	M	92
May 1, 1951	1°51′ N.	157°20′ W.	M	86
May 26, 1954	4°52′ N.	159°35′ W.	In	128
May 28, 1954	4°02′ N.	159°34′ W.	In	122
May 25, 1954	4°45′ N.	160°11′ W.	In	121
May 28, 1950	5°53′ N.	162°05′ W.	In	118
May 30, 1954	3°58′ N.	159°04′ W.	In	117
May 3, 1950	4°42′ N.	160°24′ W.	In	115
May 31, 1950	6°25′ N.	162°26′ W.	In	115
May 30, 1954	3°58′ N.	159°04′ W.	In	114
May 27, 1954	4°17′ N.	160°28′ W.	In	110
May 29, 1950	6°25′ N.	162°26′ W.	In	109
May 30, 1954	3°58′ N.	159°04′ W.	In	108
May 12, 1950	1°51′ N.	157°20′ W.	In	107
May 17, 1954	5°58′ N.	162°52′ W.	In	106
May 11, 1951	5°53′ N.	162°05′ W.	In	104
May 30, 1954	3°58′ N.	159°04′ W.	In	104
May 1, 1951	1°51′ N.	157°20′ W.	In	100
May 31, 1951	6°25′ N.	162°26′ W.	In	100
May 1, 1951	1°51′ N.	157°20′ W.	In	98
May 30, 1954	3°58′ N.	159°04′ W.	In	98
May 30, 1951	6°25′ N.	162°26′ W.	In	94
May 12, 1951	6°25′ N.	162°26′ W.	In	92
May 30, 1951	6°25′ N.	162°26′ W.	In	90
May 31, 1951	6°25′ N.	162°26′ W.	In	90
May 30, 1951	6°25′ N.	162°26′ W.	In	89
May 31, 1951	6°25′ N.	162°26′ W.	In	88
Do	6°25′ N.	162°26′ W.	In	88
Do	6°25′ N.	162°26′ W.	In	88
May 28, 1950	6°25′ N.	162°26′ W.	In	85
May 31, 1951	6°25′ N.	162°26′ W.	In	82
May 17, 1954	5°58′ N.	162°52′ W.	Im	149
May 31, 1950	6°25′ N.	162°26′ W.	Im	115
May 27, 1950	5°53′ N.	162°05′ W.	Im	112
May 3, 1950	4°42′ N.	160°24′ W.	Im	111
May 17, 1954	5°58′ N.	162°52′ W.	Im	111
May 3, 1950	4°42′ N.	160°24′ W.	Im	108
Do	4°42′ N.	160°24′ W.	Im	104
May 30, 1954	3°58′ N.	159°04′ W.	Im	103
May 28, 1954	4°02′ N.	159°34′ W.	Im	102
May 17, 1954	5°58′ N.	162°52′ W.	Im	101
May 28, 1954	4°02′ N.	159°34′ W.	Im	101
May 30, 1954	3°58′ N.	159°04′ W.	Im	101
May 17, 1954	5°58′ N.	162°52′ W.	Im	100
May 30, 1951	6°25′ N.	162°26′ W.	Im	96
May 28, 1954	4°02′ N.	159°34′ W.	Im	93
May 30, 1951	6°25′ N.	162°26′ W.	Im	90
May 20, 1951	6°25′ N.	162°26′ W.	Im	88
May 24, 1954	4°56′ N.	160°32′ W.	Im	88
May 30, 1951	6°25′ N.	162°26′ W.	Im	88
Do	6°25′ N.	162°26′ W.	Im	87
Do	6°25′ N.	162°26′ W.	Im	86
Do	6°25′ N.	162°26′ W.	Im	86
May 31, 1951	6°25′ N.	162°26′ W.	Im	85
May 1, 1951	1°51′ N.	157°20′ W.	Im	83
Do	1°51′ N.	157°20′ W.	Im	82
Do	1°51′ N.	157°20′ W.	Im	81
Do	1°51′ N.	157°20′ W.	Im	80
Do	1°51′ N.	157°20′ W.	Im	80
May 7, 1951	3°52′ N.	159°20′ W.	Im	79
May 3, 1950	4°42′ N.	160°24′ W.	Im	75
May 11, 1951	6°25′ N.	162°26′ W.	Im	75
Do	6°25′ N.	162°26′ W.	Im	75
May 27, 1950	5°53′ N.	162°05′ W.	Im	74
Do	6°25′ N.	162°26′ W.	Im	74
May 30, 1953	4°26′ S.	170°09′ W.	R	134
May 31, 1953	3°27′ S.	170°12′ W.	M	149
May 28, 1953	6°51′ S.	170°02′ W.	M	148
May 30, 1953	4°26′ S.	170°09′ W.	M	144
Do	4°26′ S.	170°09′ W.	M	136
Do	4°26′ S.	170°09′ W.	M	136
Do	4°26′ S.	170°09′ W.	M	133
May 29, 1953	5°41′ S.	169°44′ W.	M	103
May 30, 1953	4°26′ S.	170°09′ W.	In	130
Do	4°26′ S.	170°09′ W.	Im	94
June 3, 1952	0°19′ N.	119°58′ W.	M	157
June 12, 1952	6°06′ N.	129°55′ W.	R	156
June 9, 1952	2°19′ N.	130°07′ W.	R	150
June 12, 1952	6°06′ N.	129°55′ W.	R	142
June 13, 1952	8°00′ N.	130°24′ W.	R	139
June 12, 1952	6°06′ N.	129°55′ W.	R	129
June 13, 1952	8°00′ N.	130°24′ W.	R	94
June 6, 1952	1°01′ S.	125°56′ W.	M	153
June 8, 1952	0°21′ N.	129°23′ W.	M	153
June 9, 1952	2°19′ N.	130°07′ W.	M	146
Do	2°19′ N.	130°07′ W.	M	135
Do	2°19′ N.	130°07′ W.	Im	142
June 1, 1951	6°25′ N.	162°26′ W.	R	90
June 7, 1954	1°52′ N.	156°47′ W.	M	152
June 2, 1954	2°29′ N.	158°22′ W.	M	147
June 1, 1954	3°04′ N.	159°13′ W.	M	146
June 9, 1954	1°47′ N.	158°16′ W.	M	142
June 1, 1954	3°04′ N.	159°13′ W.	M	140
June 2, 1954	2°29′ N.	158°22′ W.	M	138
June 7, 1954	1°52′ N.	156°47′ W.	M	126
June 1, 1951	6°25′ N.	162°26′ W.	M	118
June 5, 1950	4°42′ N.	160°24′ W.	M	99
June 1, 1951	6°25′ N.	162°26′ W.	M	90
Do	5°53′ N.	162°05′ W.	M	87
Do	5°53′ N.	162°05′ W.	M	84
Do	5°53′ N.	162°05′ W.	M	83
June 9, 1954	1°47′ N.	158°16′ W.	In	128
June 1, 1954	3°04′ N.	159°13′ W.	In	118
June 7, 1954	1°52′ N.	156°47′ W.	In	115
June 4, 1954	2°03′ N.	157°40′ W.	In	114
Do	2°03′ N.	157°40′ W.	In	112
June 1, 1954	3°04′ N.	159°13′ W.	In	110
June 4, 1950	4°42′ N.	160°24′ W.	In	110
June 8, 1954	2°01′ N.	157°09′ W.	In	108
June 4, 1954	2°03′ N.	157°40′ W.	In	100
June 8, 1954	2°01′ N.	157°09′ W.	Im	120
June 7, 1954	1°52′ N.	156°47′ W.	Im	110
June 4, 1950	4°42′ N.	160°24′ W.	Im	100
June 8, 1954	2°01′ N.	157°09′ W.	Im	94
June 6, 1951	3°52′ N.	159°20′ W.	Im	85
Do	3°52′ N.	159°20′ W.	Im	83
Do	3°52′ N.	159°20′ W.	Im	83
June 4, 1950	4°42′ N.	160°24′ W.	Im	82
June 6, 1951	3°52′ N.	159°20′ W.	Im	82
Do	3°52′ N.	159°20′ W.	Im	82
Do	3°52′ N.	159°20′ W.	Im	80
June 1, 1951	5°53′ N.	162°05′ W.	Im	77
Do	5°53′ N.	162°05′ W.	Im	76
Do	5°53′ N.	162°05′ W.	Im	76
June 3, 1950	5°53′ N.	162°05′ W.	Im	75
June 2, 1953	0°30′ S.	169°52′ W.	R	138
June 1, 1953	2°14′ S.	170°00′ W.	M	142
June 2, 1953	0°30′ S.	169°52′ W.	M	141
Do	0°30′ S.	169°52′ W.	M	133
Do	0°30′ S.	169°52′ W.	M	131
June 1, 1953	2°14′ S.	170°00′ W.	M	129
June 2, 1953	0°30′ S.	169°52′ W.	M	121
June 1, 1953	2°14′ S.	170°00′ W.	M	102
June 12, 1951	2°50′ S.	171°40′ W.	Im	135
June 17, 1951	2°50′ S.	171°40′ W.	Im	122

TABLE 1.—*Data on 740 yellowfin tuna specimens from the central equatorial Pacific for which maturity determinations were made in the laboratory*—Continued

Date	Position		Stage of maturity	Fish length
	Latitude	Longitude		
				Cm.
June 17, 1951	2°50′ S.	171°40′ W.	Im	118
June 1, 1953	2°14′ S.	170°00′ W.	Im	81
July 17, 1950	2°50′ S.	171°40′ W.	M	140
July 15, 1950	2°50′ S.	171°40′ W.	M	128
July 19, 1950	2°50′ S.	171°40′ W.	In	134
Do	2°50′ S.	171°40′ W.	Im	118
Aug. 24, 1952	4°28′ N.	139°51′ W.	M	156
Aug. 23, 1952	5°16′ N.	140°28′ W.	M	151
Aug. 24, 1952	4°28′ N.	139°51′ W.	M	151
Aug. 31, 1952	3°45′ N.	140°10′ W.	M	151
Aug. 26, 1952	2°23′ N.	140°12′ W.	M	146
Aug. 31, 1952	3°45′ N.	140°10′ W.	M	143
Aug. 28, 1952	1°00′ N.	140°22′ W.	M	139
Aug. 24, 1952	4°28′ N.	139°51′ W.	M	129
Aug. 21, 1952	7°02′ N.	140°46′ W.	M	124
Aug. 23, 1952	5°16′ N.	140°28′ W.	M	121
Aug. 28, 1952	1°00′ N.	140°22′ W.	In	157
Aug. 29, 1952	2°00′ N.	140°40′ W.	In	153 or 139
Aug. 27, 1952	1°33′ N.	140°13′ W.	In	147
Aug. 31, 1952	3°45′ N.	140°10′ W.	In	142
Aug. 26, 1952	2°23′ N.	140°12′ W.	In	141
Aug. 29, 1952	2°00′ N.	140°40′ W.	In	139
Aug. 13, 1953	0°08′ N.	154°51′ W.	M	168
Do	0°08′ N.	154°51′ W.	M	143
Do	0°08′ N.	154°51′ W.	M	143
Aug. 27, 1951	9°36′ N.	150°06′ W.	M	143 or 131
Aug. 13, 1953	0°08′ N.	154°51′ W.	M	142
Do	0°08′ N.	154°51′ W.	M	141
Do	0°08′ N.	154°51′ W.	M	138
Aug. 26, 1953	7°50′ N.	159°24′ W.	M	153
Aug. 16, 1953	4°10′ S.	155°33′ W.	M	151
Aug. 12, 1953	1°21′ N.	155°16′ W.	M	148
Aug. 19, 1953	1°31′ S.	159°53′ W.	M	144
Aug. 7, 1953	2°05′ N.	157°38′ W.	M	143
Do	2°05′ N.	157°38′ W.	M	142
Aug. 21, 1953	1°11′ N.	160°08′ W.	M	142
Aug. 25, 1953	6°10′ N.	160°02′ W.	M	142
Aug. 7, 1953	2°05′ N.	157°38′ W.	M	141
Aug. 20, 1953	0°01′ N.	159°56′ W.	M	141
Aug. 21, 1953	1°11′ N.	160°08′ W.	M	141
Do	1°11′ N.	160°08′ W.	M	141
Do	1°11′ N.	160°08′ W.	M	140
Do	1°11′ N.	160°08′ W.	M	140
Aug. 19, 1953	1°31′ S.	159°53′ W.	M	139
Aug. 25, 1953	6°10′ N.	160°02′ W.	M	139
Aug. 7, 1953	2°05′ N.	157°38′ W.	M	138
Aug. 12, 1953	1°21′ N.	155°16′ W.	M	136
Do	1°21′ N.	155°16′ W.	M	136
Aug. 19, 1953	1°31′ S.	159°53′ W.	M	136
Aug. 20, 1953	0°01′ N.	159°56′ W.	M	136
Aug. 7, 1953	2°05′ N.	157°38′ W.	M	135
Do	2°05′ N.	157°38′ W.	M	135
Aug. 12, 1953	1°21′ N.	155°16′ W.	M	135
Aug. 14, 1953	1°08′ S.	155°18′ W.	M	134
Aug. 19, 1953	1°31′ S.	159°53′ W.	M	134
Aug. 23, 1953	3°22′ N.	160°24′ W.	M	128
Aug. 7, 1953	2°05′ N.	157°38′ W.	M	126
Do	2°05′ N.	157°38′ W.	M	124
Aug. 25, 1950	6°25′ N.	162°26′ W.	M	111
Aug. 14, 1953	1°08′ S.	155°18′ W.	In	147
Aug. 19, 1953	1°31′ S.	159°53′ W.	In	142
Aug. 14, 1953	1°08′ S.	155°18′ W.	In	140
Aug. 16, 1953	4°10′ S.	155°33′ W.	In	139
Aug. 14, 1953	1°08′ S.	155°18′ W.	In	138
Aug. 18, 1953	2°56′ S.	160°14′ W.	In	138
Aug. 19, 1953	1°31′ S.	159°53′ W.	In	138
Do	1°31′ S.	159°53′ W.	In	136
Aug. 14, 1953	1°08′ S.	155°18′ W.	In	134
Aug. 18, 1953	2°56′ S.	160°14′ W.	In	132
Aug. 14, 1953	1°08′ S.	155°18′ W.	In	131
Aug. 21, 1953	1°11′ N.	160°08′ W.	In	127
Aug. 19, 1953	1°31′ S.	159°53′ W.	In	125
Aug. 21, 1953	1°11′ N.	160°08′ W.	In	111
Aug. 15, 1953	2°33′ S.	155°23′ W.	In	89
Aug. 18, 1953	2°56′ S.	160°14′ W.	Im	139
Aug. 20, 1953	0°01′ N.	159°56′ W.	Im	116
Aug. 21, 1953	1°11′ N.	160°08′ W.	Im	109
Aug. 14, 1953	1°08′ S.	155°18′ W.	Im	104
Aug. 25, 1953	6°10′ N.	160°02′ W.	Im	102
Aug. 18, 1953	2°56′ S.	160°14′ W.	Im	89
Aug. 16, 1950	3°35′ S.	171°31′ W.	M	118
Do	3°35′ S.	171°31′ W.	Im	114
Aug. 17, 1950	3°07′ S.	171°05′ W.	Im	85
Do	3°07′ S.	171°05′ W.	Im	66
Do	3°07′ S.	171°05′ W.	Im	64
Sept. 6, 1952	2°06′ N.	140°56′ W.	R	155
Sept. 9, 1952	2°33′ N.	143°22′ W.	R	136
Sept. 7, 1952	1°42′ N.	141°24′ W.	M	153
Sept. 9, 1952	2°33′ N.	143°22′ W.	M	148
Do	2°33′ N.	143°22′ W.	M	147
Sept. 3, 1952	4°04′ N.	140°09′ W.	M	146
Sept. 6, 1952	2°06′ N.	140°56′ W.	M	144
Sept. 7, 1952	1°42′ N.	141°24′ W.	M	144
Do	1°42′ N.	141°24′ W.	M	139
Sept. 2, 1952	3°05′ N.	140°02′ W.	In	152
Sept. 6, 1952	2°06′ N.	140°56′ W.	In	148
Sept. 2, 1952	3°05′ N.	140°02′ W.	In	146
Sept. 4, 1952	3°20′ N.	140°10′ W.	In	144
Sept. 7, 1952	1°42′ N.	141°24′ W.	In	140
Sept. 1, 1952	3°31′ N.	140°28′ W.	In	138
Sept. 2, 1952	3°05′ N.	140°02′ W.	In	137
Sept. 4, 1952	3°20′ N.	140°10′ W.	Im	149
Sept. 5, 1951	2°02′ N.	151°50′ W.	R	142
Sept. 13, 1952	1°22′ N.	149°54′ W.	R	137
Sept. 2, 1951	4°04′ N.	150°06′ W.	M	153
Sept. 13, 1952	1°22′ N.	149°54′ W.	M	153
Sept. 16, 1952	2°28′ N.	150°38′ W.	M	152
Sept. 4, 1951	1°59′ N.	150°12′ W.	M	148
Sept. 15, 1952	2°05′ N.	150°23′ W.	M	148
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	148
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	147
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	147
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	146
Sept. 18, 1951	2°02′ N.	153°12′ W.	M	146
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	146
Sept. 20, 1951	0°54′ N.	150°00′ W.	M	146
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	145
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	145
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	144
Do	2°57′ N.	150°17′ W.	M	143
Sept. 4, 1951	1°59′ N.	150°12′ W.	M	143
Sept. 6, 1951	2°03′ N.	153°12′ W.	M	143
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	143
Sept. 4, 1951	1°59′ N.	150°12′ W.	M	142
Do	1°59′ N.	150°12′ W.	M	142
Sept. 17, 1951	2°01′ N.	154°50′ W.	M	142
Sept. 18, 1951	2°02′ N.	153°12′ W.	M	142
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	142
Sept. 2, 1951	4°04′ N.	150°06′ W.	M	141
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	141
Sept. 5, 1951	2°02′ N.	151°50′ W.	M	141
Do	2°02′ N.	151°50′ W.	M	141
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	141
Do	2°00′ N.	151°24′ W.	M	141
Sept. 20, 1951	0°54′ N.	150°00′ W.	M	141
Sept. 2, 1951	4°04′ N.	150°06′ W.	M	140
Sept. 5, 1951	2°02′ N.	151°50′ W.	M	140
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	140
Do	2°00′ N.	151°24′ W.	M	140
Sept. 2, 1951	4°04′ N.	150°06′ W.	M	139
Do	4°04′ N.	150°06′ W.	M	139
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	139
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	139
Do	2°00′ N.	151°24′ W.	M	139
Sept. 20, 1951	0°54′ N.	150°00′ W.	M	139
Sept. 2, 1951	4°04′ N.	150°06′ W.	M	138
Do	4°04′ N.	150°06′ W.	M	138
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	138
Sept. 5, 1951	2°02′ N.	151°50′ W.	M	138
Sept. 13, 1952	1°22′ N.	149°54′ W.	M	138
Sept. 17, 1951	2°01′ N.	154°50′ W.	M	138
Sept. 19, 1951	2°00′ N.	151°24′ W.	M	138
Sept. 20, 1951	0°54′ N.	150°00′ W.	M	138
Sept. 4, 1951	1°59′ N.	150°12′ W.	M	137
Sept. 6, 1951	2°03′ N.	153°12′ W.	M	137
Do	2°03′ N.	153°12′ W.	M	137
Sept. 18, 1951	2°02′ N.	153°12′ W.	M	137
Sept. 2, 1951	4°04′ N.	150°06′ W.	M	136
Do	4°04′ N.	150°06′ W.	M	136
Sept. 5, 1951	2°02′ N.	151°50′ W.	M	136
Sept. 16, 1952	2°28′ N.	150°38′ W.	M	136
Sept. 2, 1951	4°04′ N.	150°06′ W.	M	135
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	135
Sept. 18, 1951	2°02′ N.	153°12′ W.	M	135
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	134
Sept. 5, 1951	2°02′ N.	151°50′ W.	M	133
Do	2°02′ N.	151°50′ W.	M	133
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	132
Sept. 4, 1951	1°59′ N.	150°12′ W.	M	131
Sept. 5, 1951	2°02′ N.	151°50′ W.	M	131
Sept. 6, 1951	2°03′ N.	153°12′ W.	M	131
Sept. 2, 1951	4°04′ N.	150°06′ W.	M	129
Sept. 17, 1952	3°26′ N.	151°40′ W.	M	129
Sept. 4, 1951	1°59′ N.	150°12′ W.	M	128
Sept. 3, 1951	2°57′ N.	150°17′ W.	M	115
Sept. 18, 1951	2°02′ N.	153°12′ W.	M	106
Sept. 17, 1951	2°01′ N.	154°50′ W.	M	75
Sept. 19, 1951	2°00′ N.	151°24′ W.	In	143
Sept. 17, 1951	2°01′ N.	154°50′ W.	In	142
Sept. 19, 1951	2°00′ N.	151°24′ W.	In	142

TABLE 1.—*Data on 740 yellowfin tuna specimens from the central equatorial Pacific for which maturity determinations were made in the laboratory*—Continued

Date	Position		Stage of maturity	Fish length	Date	Position		Stage of maturity	Fish length
	Latitude	Longitude				Latitude	Longitude		
				Cm.					*Cm.*
Sept. 22, 1951	1°07′ S.	150°21′ W.	In	142	Nov. 20, 1950	2°55′ N.	160°20′ W.	Im	137
Sept. 17, 1951	2°01′ N.	154°50′ W.	In	141	Nov. 23, 1950	5°04′ N.	159°03′ W.	Im	137
Do	2°01′ N.	154°50′ W.	In	141	Nov. 21, 1950	3°52′ N.	159°57′ W.	Im	136
Do	2°01′ N.	154°50′ W.	In	140	Do	3°52′ N.	159°57′ W.	Im	135
Do	2°01′ N.	154°50′ W.	In	140	Nov. 23, 1950	5°04′ N.	159°03′ W.	Im	135
Sept. 19, 1951	2°00′ N.	151°24′ W.	In	140	Nov. 16, 1950	3°52′ N.	159°20′ W.	Im	130
Sept. 17, 1951	2°01′ N.	154°50′ W.	In	139	Do	3°52′ N.	159°20′ W.	Im	130
Do	2°01′ N.	154°50′ W.	In	139	Do	3°52′ N.	159°20′ W.	Im	122
Sept. 20, 1951	0°54′ N.	150°00′ W.	In	139	Nov. 24, 1950	6°13′ N.	158°53′ W.	Im	122
Sept. 19, 1951	2°00′ N.	151°24′ W.	In	138	Nov. 6, 1950	5°53′ N.	162°05′ W.	Im	120
Sept. 17, 1951	2°01′ N.	154°50′ W.	In	137	Nov. 16, 1950	3°52′ N.	159°20′ W.	Im	120
Sept. 4, 1951	1°59′ N.	150°12′ W.	In	136	Nov. 23, 1950	4°42′ N.	160°24′ W.	Im	120
Sept. 17, 1951	2°01′ N.	154°50′ W.	In	134	Nov. 24, 1950	6°13′ N.	158°53′ W.	Im	118
Sept. 25, 1951	4°56′ S.	150°13′ W.	In	133	Nov. 23, 1950	4°42′ N.	160°24′ W.	Im	114
Sept. 17, 1951	2°01′ N.	154°50′ W.	In	131	Nov. 3, 1950	6°25′ N.	162°26′ W.	Im	110
Do	2°01′ N.	154°50′ W.	In	131	Nov. 28, 1950	5°53′ N.	162°05′ W.	Im	110
Sept. 18, 1951	2°02′ N.	153°12′ W.	In	129	Nov. 23, 1950	4°42′ N.	160°24′ W.	Im	107
Sept. 17, 1951	2°01′ N.	154°50′ W.	In	128	Nov. 2, 1950	4°42′ N.	160°24′ W.	Im	105
Sept. 2, 1951	4°04′ N.	150°06′ W.	In	127	Nov. 16, 1950	3°54′ N.	159°26′ W.	Im	104
Sept. 25, 1951	4°56′ S.	150°13′ W.	In	122	Nov. 24, 1950	4°42′ N.	160°24′ W.	Im	103
Do	4°56′ S.	150°13′ W.	Im	117	Nov. 2, 1950	4°42′ N.	160°24′ W.	Im	102
Sept. 12, 1951	1°52′ N.	155°24′ W.	M	144	Nov. 6, 1950	5°53′ N.	162°05′ W.	Im	101
Sept. 15, 1951	1°19′ N.	157°30′ W.	M	143	Nov. 22, 1950	4°42′ N.	160°24′ W.	Im	101
Sept. 12, 1951	1°52′ N.	155°24′ W.	M	138	Do	4°42′ N.	160°24′ W.	Im	99
Do	1°52′ N.	155°24′ W.	M	137	Nov. 23, 1950	4°42′ N.	160°24′ W.	Im	99
Sept. 16, 1951	1°52′ N.	156°24′ W.	M	133	Nov. 24, 1950	4°42′ N.	160°24′ W.	Im	98
Sept. 14, 1951	1°59′ N.	157°36′ W.	M	113	Nov. 17, 1950	3°52′ N.	159°20′ W.	Im	96
Sept. 12, 1951	1°52′ N.	155°24′ W.	In	144	Nov. 23, 1950	4°42′ N.	160°24′ W.	Im	94
Sept. 13, 1951	2°02′ N.	156°20′ W.	In	144	Nov. 27, 1950	5°53′ N.	162°05′ W.	Im	93
Do	2°02′ N.	156°20′ W.	In	144	Nov. 23, 1950	4°42′ N.	160°24′ W.	Im	92
Sept. 12, 1951	1°52′ N.	155°24′ W.	In	142	Nov. 27, 1950	5°53′ N.	162°05′ W.	Im	88
Sept. 13, 1951	2°02′ N.	156°20′ W.	In	141	Nov. 24, 1950	4°42′ N.	160°24′ W.	Im	87
Sept. 16, 1951	1°52′ N.	156°24′ W.	In	140	Nov. 28, 1950	5°53′ N.	162°05′ W.	Im	86
Sept. 13, 1951	2°02′ N.	156°20′ W.	In	136	Nov. 23, 1950	4°42′ N.	160°24′ W.	Im	85
Do	2°02′ N.	156°20′ W.	In	136	Nov. 24, 1950	4°42′ N.	160°24′ W.	Im	85
Do	2°02′ N.	156°20′ W.	In	136	Nov. 4, 1950	6°25′ N.	162°26′ W.	Im	83
Sept. 16, 1951	1°52′ N.	156°24′ W.	In	136	Nov. 3, 1950	6°25′ N.	162°26′ W.	Im	82
Sept. 13, 1951	2°02′ N.	156°20′ W.	In	135	Nov. 22, 1950	4°42′ N.	160°24′ W.	Im	81
Sept. 12, 1951	1°52′ N.	155°24′ W.	In	133	Nov. 2, 1950	6°25′ N.	162°26′ W.	Im	78
Sept. 15, 1951	1°19′ N.	157°30′ W.	In	124	Nov. 4, 1950	5°53′ N.	162°05′ W.	Im	77
Sept. 13, 1951	2°02′ N.	156°20′ W.	In	115	Nov. 22, 1950	4°42′ N.	160°24′ W.	Im	77
Sept. 14, 1951	1°59′ N.	157°36′ W.	In	114	Nov. 24, 1950	4°42′ N.	160°24′ W.	Im	76
Do	1°59′ N.	157°36′ W.	In	109	Do	4°42′ N.	160°24′ W.	Im	71
Do	1°59′ N.	157°36′ W.	In	93	Nov. 28, 1950	5°53′ N.	162°05′ W.	Im	68
Do	1°59′ N.	157°36′ W.	Im	104	Nov. 4, 1950	6°25′ N.	162°26′ W.	Im	63
Do	1°59′ N.	157°36′ W.	Im	96	Nov. 27, 1950	5°53′ N.	162°05′ W.	Im	63
Oct. 19, 1952	8°14′ N.	120°32′ W.	R	147	Nov. 30, 1950	6°25′ N.	162°26′ W.	Im	61
Oct. 30, 1952	3°58′ S.	120°14′ W.	In	133	Nov. 20, 1952	3°36′ S.	170°02′ W.	R	142
Oct. 31, 1952	5°36′ S.	120°25′ W.	Im	159	Nov. 11, 1950	6°25′ N.	167°32′ W.	M	153
Oct. 27, 1952	5°34′ N.	152°26′ W.	M	143	Nov. 23, 1952	1°00′ S.	169°27′ W.	M	135
Oct. 29, 1952	3°12′ N.	152°05′ W.	M	135	Nov. 24, 1952	0°04′ N.	168°48′ W.	M	132
Oct. 27, 1952	5°34′ N.	152°26′ W.	M	127	Nov. 26, 1952	2°24′ N.	168°44′ W.	In	139
Oct. 30, 1952	2°15′ N.	151°19′ W.	In	149	Nov. 19, 1952	5°00′ S.	170°08′ W.	In	131
Oct. 27, 1952	5°34′ N.	152°26′ W.	In	140	Dec. 12, 1953	4°14′ N.	154°56′ W.	In	126
Oct. 30, 1952	2°15′ N.	151°19′ W.	In	137	Do	4°14′ N.	154°56′ W.	Im	114
Oct. 27, 1952	5°34′ N.	152°26′ W.	In	135	Do	4°14′ N.	154°56′ W.	Im	114
Oct. 28, 1952	4°00′ N.	152°20′ W.	In	133	Do	4°14′ N.	154°56′ W.	Im	103
Oct. 25, 1950	7°17′ N.	157°04′ W.	M	143	Dec. 6, 1953	2°27′ N.	155°26′ W.	In	148
Oct. 31, 1950	6°25′ N.	162°26′ W.	Im	99	Dec. 11, 1953	3°31′ N.	155°23′ W.	In	147
Do	6°25′ N.	162°26′ W.	Im	95	Dec. 7, 1953	1°59′ N.	156°09′ W.	In	146
Do	6°25′ N.	162°26′ W.	Im	95	Dec. 3, 1953	1°28′ S.	155°25′ W.	In	144
Do	6°25′ N.	162°26′ W.	Im	88	Do	1°28′ S.	155°25′ W.	In	142
Nov. 1, 1952	7°33′ S.	120°21′ W.	M	138	Dec. 8, 1953	2°14′ N.	157°08′ W.	In	140
Do	7°33′ S.	120°21′ W.	In	139	Dec. 2, 1953	3°02′ S.	155°12′ W.	In	138
Do	7°33′ S.	120°21′ W.	In	127	Dec. 5, 1953	1°22′ N.	155°18′ W.	In	137
Do	7°33′ S.	120°21′ W.	In	123	Dec. 11, 1953	3°31′ N.	155°23′ W.	In	137
Do	7°33′ S.	120°21′ W.	Im	153	Dec. 6, 1953	2°27′ N.	155°26′ W.	In	136
Nov. 6, 1952	3°11′ S.	130°17′ W.	M	132	Do	2°27′ N.	155°26′ W.	In	134
Do	3°11′ S.	130°17′ W.	Im	150	Do	2°27′ N.	155°26′ W.	In	127
Nov. 3, 1952	1°00′ N.	151°26′ W.	In	[1] 145	Dec. 1, 1953	4°33′ S.	155°08′ W.	In	123
Do	1°00′ N.	151°26′ W.	In	142	Dec. 2, 1953	3°02′ S.	155°12′ W.	In	122
Nov. 2, 1952	2°13′ N.	151°51′ W.	In	135	Dec. 7, 1953	1°59′ N.	156°09′ W.	In	118
Nov. 6, 1950	5°53′ N.	162°05′ W.	M	146	Dec. 8, 1953	2°14′ N.	157°08′ W.	In	110
Nov. 7, 1950	6°13′ N.	163°05′ W.	M	134	Dec. 7, 1953	1°59′ N.	156°09′ W.	In	107
Nov. 8, 1950	6°59′ N.	163°54′ W.	M	133	Do	1°59′ N.	156°09′ W.	In	105
Nov. 9, 1950	7°24′ N.	164°23′ W.	M	133	Dec. 8, 1953	2°14′ N.	157°08′ W.	In	105
Nov. 30, 1950	6°25′ N.	162°26′ W.	M	129	Do	2°14′ N.	157°08′ W.	In	103
Nov. 9, 1950	7°24′ N.	164°23′ W.	In	143	Do	2°14′ N.	157°08′ W.	In	103
Nov. 16, 1950	3°52′ N.	159°20′ W.	In	143	Dec. 2, 1953	3°02′ S.	155°12′ W.	In	88
Nov. 24, 1950	6°13′ N.	158°53′ W.	In	140	Dec. 9, 1953	2°01′ N.	158°15′ W.	In	87
Nov. 19, 1950	1°12′ N.	160°21′ W.	In	139	Dec. 3, 1953	1°28′ S.	155°25′ W.	Im	144
Nov. 1, 1950	1°51′ N.	157°20′ W.	In	136	Dec. 7, 1953	1°59′ N.	156°09′ W.	Im	144
Nov. 21, 1950	3°52′ N.	159°57′ W.	In	134	Dec. 9, 1953	2°01′ N.	158°15′ W.	Im	144
Do	3°52′ N.	159°57′ W.	In	132	Dec. 11, 1953	3°31′ N.	155°23′ W.	Im	144
Nov. 24, 1950	6°13′ N.	158°53′ W.	In	122	Do	3°31′ N.	155°23′ W.	Im	144
Nov. 20, 1950	2°55′ N.	160°20′ W.	Im	143	Dec. 3, 1953	1°28′ S.	155°25′ W.	Im	142
Do	2°55′ N.	160°20′ W.	Im	141	Do	1°28′ S.	155°25′ W.	Im	141
Nov. 19, 1950	1°12′ N.	160°21′ W.	Im	138	Dec. 11, 1953	3°31′ N.	155 23′ W.	Im	141

[1] From length-weight relation.

TABLE 1.—*Data on 740 yellowfin tuna specimens from the central equatorial Pacific for which maturity determinations were made in the laboratory*—Continued

Date	Position		Stage of maturity	Fish length	Date	Position		Stage of maturity	Fish length
	Latitude	Longitude				Latitude	Longitude		
				Cm.					*Cm.*
Dec. 7, 1953	1°59′ N.	156°09′ W.	Im	138	Dec. 8, 1953	2°14′ N.	157°08′ W.	Im	1
Dec. 11, 1953	3°31′ N.	155°23′ W.	Im	138	Do	2°14′ N.	157°08′ W.	Im	1
Do	3°31′ N.	155°23′ W.	Im	137	Do	2°14′ N.	157°08′ W.	Im	1
Dec. 7, 1953	1°59′ N.	156°09′ W.	Im	136	Do	2°14′ N.	157°08′ W.	Im	1
Dec. 11, 1953	3°31′ N.	155°23′ W.	Im	129	Dec. 9, 1953	2°01′ N.	158°15′ W.	Im	1
Dec. 1, 1953	4°33′ S.	155°08′ W.	Im	125	Dec. 8, 1953	2°14′ N.	157°08′ W.	Im	1
Dec. 5, 1953	1°22′ N.	155°18′ W.	Im	123	Do	2°14′ N.	157°08′ W.	Im	
Dec. 2, 1953	3°02′ S.	155°12′ W.	Im	121	Do	2°14′ N.	157°08′ W.	Im	
Dec. 7, 1953	1°59′ N.	156°09′ W.	Im	120	Do	2°14′ N.	157°08′ W.	Im	
Dec. 2, 1953	3°02′ S.	155°12′ W.	Im	119	Do	2°14′ N.	157°08′ W.	Im	
Dec. 6, 1953	2°27′ N.	155°26′ W.	Im	119	Do	2°14′ N.	157°08′ W.	Im	
Do	2°27′ N.	155°26′ W.	Im	116	Do	2°14′ N.	157°08′ W.	Im	
Dec. 2, 1953	3°02′ S.	155°12′ W.	Im	115	Do	2°14′ N.	157°08′ W.	Im	
Dec. 7, 1953	1°59′ N.	156°09′ W.	Im	110	Dec. 9, 1953	2°01′ N.	158°15′ W.	Im	
Dec. 8, 1953	2°14′ N.	157°08′ W.	Im	110	Dec. 8, 1953	2°14′ N.	157°08′ W.	Im	

On several cruises, observations were made on the state of maturity of ovaries which, with a few exceptions, were then discarded. Although these field observations were subjective and liable to differences between observers, they were used to supplement the seasonal and areal coverage. After discussion with the various observers, and after comparisons of field observations with laboratory classifications, we were able to classify most of the ovaries reliably into two groups, "inactive" (immature and intermediate) and "active" (maturing and ripe). Field classifications are given in table 2. Questionable observations were not considered, and are not included in the table.

TABLE 2.—*Data on yellowfin tuna specimens from the central equatorial Pacific for which maturity determinations were made in the field*

[A, active; I, inactive]

Date	Position		Stage of maturity	Fish length	Date	Position		Stage of maturity	Fish length
	Latitude	Longitude				Latitude	Longitude		
				Cm.					*Cm.*
May 28, 1954	4°02′ N.	159°34′ W.	A	149	June 11, 1954	0°26′ S.	158°57′ W.	A	14
May 30, 1954	3°58′ N.	159°04′ W.	A	140	June 14, 1954	0°13′ S.	160°02′ W.	A	14
May 28, 1954	4°02′ N.	159°34′ W.	A	139	June 15, 1954	0°30′ S.	160°19′ W.	A	14
Do	4°02′ N.	159°34′ W.	A	123	June 3, 1954	1°43′ N.	158°28′ W.	A	14
May 17, 1954	5°58′ N.	162°52′ W.	A	120	June 7, 1954	1°52′ N.	156°47′ W.	A	14
May 27, 1954	4°17′ N.	160°28′ W.	A	118	June 15, 1954	0°30′ S.	160°19′ W.	A	14
May 28, 1954	4°02′ N.	159°34′ W.	A	114	Do	0°30′ S.	160°19′ W.	A	14
Do	4°02′ N.	159°34′ W.	I	118	June 11, 1954	0°26′ S.	158°57′ W.	A	14
Do	4°02′ N.	159°34′ W.	I	116	June 14, 1954	0°13′ S.	160°02′ W.	A	14
Do	4°02′ N.	159°34′ W.	I	114	June 10, 1954	0°50′ N.	158°53′ W.	A	14
Do	4°02′ N.	159°34′ W.	I	109	June 15, 1954	0°30′ S.	160°19′ W.	A	14
May 30, 1954	3°58′ N.	159°04′ W.	I	108	Do	0°30′ S.	160°19′ W.	A	14
May 25, 1954	4°45′ N.	160°11′ W.	I	106	June 13, 1954	0°18′ S.	160°16′ W.	A	13
May 28, 1954	4°02′ N.	159°34′ W.	I	106	June 14, 1954	0°13′ S.	160°02′ W.	A	13
Do	4°02′ N.	159°34′ W.	I	103	June 12, 1954	0°14′ S.	160°00′ W.	A	13
Do	4°02′ N.	159°34′ W.	I	102	June 13, 1954	0°18′ S.	160°16′ W.	A	13
May 27, 1954	4°17′ N.	160°28′ W.	I	101	June 14, 1954	0°13′ S.	160°02′ W.	A	13
May 30, 1954	3°58′ N.	159°04′ W.	I	100	June 12, 1954	0°14′ S.	160°00′ W.	A	13
May 25, 1954	4°45′ N.	160°11′ W.	I	98	June 13, 1954	0°18′ S.	160°16′ W.	A	13
May 30, 1954	3°58′ N.	159°04′ W.	I	97	June 10, 1954	0°50′ N.	158°53′ W.	A	12
Do	3°58′ N.	159°04′ W.	I	96	June 14, 1954	0°13′ S.	160°02′ W.	A	12
Do	3°58′ N.	159°04′ W.	I	93	June 12, 1954	0°14′ S.	160°00′ W.	A	12
Do	3°58′ N.	159°04′ W.	I	93	Do	0°14′ S.	160°00′ W.	A	12
Do	3°58′ N.	159°04′ W.	I	93	Do	0°14′ S.	160°00′ W.	A	12
Do	3°58′ N.	159°04′ W.	I	92	Do	0°14′ S.	160°00′ W.	A	12
Do	3°58′ N.	159°04′ W.	I	92	Do	0°14′ S.	160°00′ W.	A	12
Do	3°58′ N.	159°04′ W.	I	91	Do	0°14′ S.	160°00′ W.	A	12
Do	3°58′ N.	159°04′ W.	I	91	June 8, 1954	2°01′ N.	157°09′ W.	A	11
Do	3°58′ N.	159°04′ W.	I	91	June 15, 1954	0°30′ S.	160°19′ W.	A	9
Do	3°58′ N.	159°04′ W.	I	89	June 8, 1954	2°01′ N.	157°09′ W.	I	12
May 25, 1954	4°45′ N.	160°11′ W.	I	88	June 12, 1954	0°14′ S.	160°00′ W.	I	12
May 30, 1954	3°58′ N.	159°04′ W.	I	88	Do	0°14′ S.	160°00′ W.	I	12
Do	3°58′ N.	159°04′ W.	I	88	Do	0°14′ S.	160°00′ W.	I	11
Do	3°58′ N.	159°04′ W.	I	87	June 13, 1954	0°18′ S.	160°16′ W.	I	11
Do	3°58′ N.	159°04′ W.	I	86	June 8, 1954	2°01′ N.	157°09′ W.	I	11
May 25, 1954	4°45′ N.	160°11′ W.	I	84	June 12, 1954	0°14′ S.	160°00′ W.	I	11
May 30, 1954	3°58′ N.	159°04′ W.	I	83	June 4, 1954	2°03′ N.	157°40′ W.	I	11
June 15, 1954	0°30′ S.	160°19′ W.	A	151	June 13, 1954	0°18′ S.	160°16′ W.	I	10
June 14, 1954	0°13′ S.	160°02′ W.	A	150	June 4, 1954	2°03′ N.	157°40′ W.	I	10
June 15, 1954	0°30′ S.	160°19′ W.	A	150	Do	2°03′ N.	157°40′ W.	I	10
June 12, 1954	0°14′ S.	160°00′ W.	A	147	June 8, 1954	2°01′ N.	157°09′ W.	I	9

TABLE 2.—*Data on yellowfin tuna specimens from the central equatorial Pacific for which maturity determinations were made in the field*—Continued

Date	Position		Stage of maturity	Fish length	Date	Position		Stage of maturity	Fish length
	Latitude	Longitude				Latitude	Longitude		
				Cm.					*Cm.*
Aug. 25, 1952	3°26′ N.	140°08′ W.	A	142	Aug. 24, 1953	4°43′ N.	160°00′ W.	I	99
Aug. 27, 1952	1°33′ N.	140°13′ W.	I	154	Do	4°43′ N.	160°00′ W.	I	96
Do	1°33′ N.	140°13′ W.	I	152	Do	4°43′ N.	160°00′ W.	I	96
Do	1°33′ N.	140°13′ W.	I	150	Do	4°43′ N.	160°00′ W.	I	95
Do	1°33′ N.	140°13′ W.	I	150	Do	4°43′ N.	160°00′ W.	I	93
Do	1°33′ N.	140°13′ W.	I	149	Do	4°43′ N.	160°00′ W.	I	88
Aug. 25, 1952	3°26′ N.	140°08′ W.	I	148	Sept. 7, 1952	1°42′ N.	141°24′ W.	I	156
Aug. 26, 1952	2°23′ N.	140°12′ W.	I	148	Sept. 3, 1952	4°04′ N.	140°09′ W.	I	150
Do	2°23′ N.	140°12′ W.	I	148	Sept. 7, 1952	1°42′ N.	141°24′ W.	I	149
Aug. 27, 1952	1°33′ N.	140°13′ W.	I	148	Sept. 9, 1952	2°33′ N.	143°22′ W.	I	148
Aug. 28, 1952	1°00′ N.	140°22′ W.	I	148	Sept. 2, 1952	3°05′ N.	140°02′ W.	I	147
Aug. 25, 1952	3°26′ N.	140°08′ W.	I	147	Do	3°05′ N.	140°02′ W.	I	145
Aug. 27, 1952	1°33′ N.	140°13′ W.	I	147	Sept. 5, 1952	2°25′ N.	140°32′ W.	I	145
Do	1°33′ N.	140°13′ W.	I	144	Sept. 2, 1952	3°05′ N.	140°02′ W.	I	144
Aug. 28, 1952	1°00′ N.	140°22′ W.	I	144	Sept. 7, 1952	1°42′ N.	141°24′ W.	I	143
Aug. 26, 1952	2°23′ N.	140°12′ W.	I	142	Sept. 9, 1952	2°33′ N.	143°22′ W.	I	143
Aug. 27, 1952	1°33′ N.	140°13′ W.	I	142	Sept. 1, 1952	3°31′ N.	140°28′ W.	I	142
Do	1°33′ N.	140°13′ W.	I	141	Sept. 7, 1952	1°42′ N.	141°24′ W.	I	139
Do	1°33′ N.	140°13′ W.	I	141	Sept. 5, 1952	2°25′ N.	140°32′ W.	I	136
Do	1°33′ N.	140°13′ W.	I	138	Sept. 11, 1952	2°57′ N.	147°22′ W.	A	157
Aug. 26, 1952	2°23′ N.	140°12′ W.	I	132	Sept. 18, 1952	3°39′ N.	151°54′ W.	A	150
Aug. 24, 1952	4°28′ N.	139°51′ W.	I	131	Sept. 16, 1952	2°28′ N.	150°38′ W.	A	146
Aug. 28, 1952	1°00′ N.	140°22′ W.	I	121	Sept. 18, 1952	3°39′ N.	151°54′ W.	A	144
Aug. 24, 1952	4°28′ N.	139°51′ W.	I	112	Sept. 19, 1952	3°49′ N.	152°10′ W.	A	143
Aug. 27, 1953	9°00′ N.	159°40′ W.	A	147	Sept. 15, 1952	2°05′ N.	150°23′ W.	A	142
Aug. 25, 1953	6°10′ N.	160°02′ W.	A	141	Sept. 19, 1952	3°49′ N.	152°10′ W.	A	142
Aug. 26, 1953	7°50′ N.	159°24′ W.	A	140	Sept. 18, 1952	3°39′ N.	151°54′ W.	A	138
Do	7°50′ N.	159°24′ W.	A	140	Sept. 16, 1952	2°28′ N.	150°38′ W.	A	137
Aug. 21, 1953	1°11′ N.	160°08′ W.	A	134	Sept. 17, 1952	3°26′ N.	151°40′ W.	A	137
Aug. 22, 1953	2°08′ N.	160°24′ W.	A	128	Sept. 16, 1952	2°28′ N.	150°38′ W.	A	135
Aug. 27, 1953	9°00′ N.	159°40′ W.	A	128	Sept. 11, 1952	2°57′ N.	147°22′ W.	I	148
Aug. 22, 1953	2°08′ N.	160°24′ W.	A	123	Sept. 14, 1952	1°48′ N.	150°05′ W.	I	144
Do	2°08′ N.	160°24′ W.	A	107	Sept. 10, 1952	2°08′ N.	145°21′ W.	I	143
Aug. 24, 1953	4°43′ N.	160°00′ W.	I	140	Sept. 11, 1952	2°57′ N.	147°22′ W.	I	143
Aug. 22, 1953	2°08′ N.	160°24′ W.	I	125	Sept. 15, 1952	2°05′ N.	150°23′ W.	I	142
Aug. 24, 1953	4°43′ N.	160°00′ W.	I	112	Sept. 14, 1952	1°48′ N.	150°05′ W.	I	135
Do	4°43′ N.	160°00′ W.	I	111	Sept. 10, 1952	2°08′ N.	145°21′ W.	I	134
Aug. 23, 1953	3°22′ N.	160°24′ W.	I	108	Sept. 15, 1952	2°05′ N.	150°23′ W.	I	134
Do	3°22′ N.	160°24′ W.	I	104	Sept. 13, 1952	1°22′ N.	149°54′ W.	I	133
Do	3°22′ N.	160°24′ W.	I	100	Sept. 16, 1952	2°28′ N.	150°38′ W.	I	117

Additional data (table 3) are available from field observations reported by the Iwate Prefecture Fishery Experiment Station (1953a and 1953b), which were obtained from Japanese longline expeditions into this area. As with the POFI field observations, the stages of maturity were combined into two groups, "active" and "inactive", and the "spent" category was disregarded. Other pertinent information found in these reports is as follows: The fishing area for the April cruise was between latitudes 9° N. and 11° N. and longitudes 170° W. and 173° W. Fish caught on this cruise ranged from 110 to 150 cm. in length, with only one fish measuring less than 120 cm. Fishing during June and July was done at 3° N. to 4° N. and 175° W. to 177° W. Fork lengths ranged from 114 to 173 cm., with only two fish measuring less than 120 cm. Eighty percent of the fish were caught in June, and the rest were caught in July.

TABLE 3.—*Number of yellowfin tuna in various stages of maturity, according to Iwate Prefecture Fishery Experiment Station*

Date	Immature	Maturing	Mature	Ripe	Spent	Location	
						Longitude	Latitude
Apr. 4–24, 1953	3	4	10	14	4	9° N.–11° N	170° W.–173° W.
June 22–July 3, 1953	29	41	97	26	22	3° N.–4° N	175° W.–177° W.

Note.—For further data see station reports (1953a and 1953b).

SIZE OF FISH AT FIRST SPAWNING

To determine the size of first-spawning fish, the fork lengths collected by POFI were grouped into classes of 10 cm., and the percentage of fish in the "active" category (maturing and ripe stages), as determined by ovary examination, was calculated for each length class. The results, illustrated in figure 1, show that all the fish smaller than 70 cm. were in a nonspawning condition. In the 70-to-79-cm. class (about 15 to 22 lbs.), 6.9

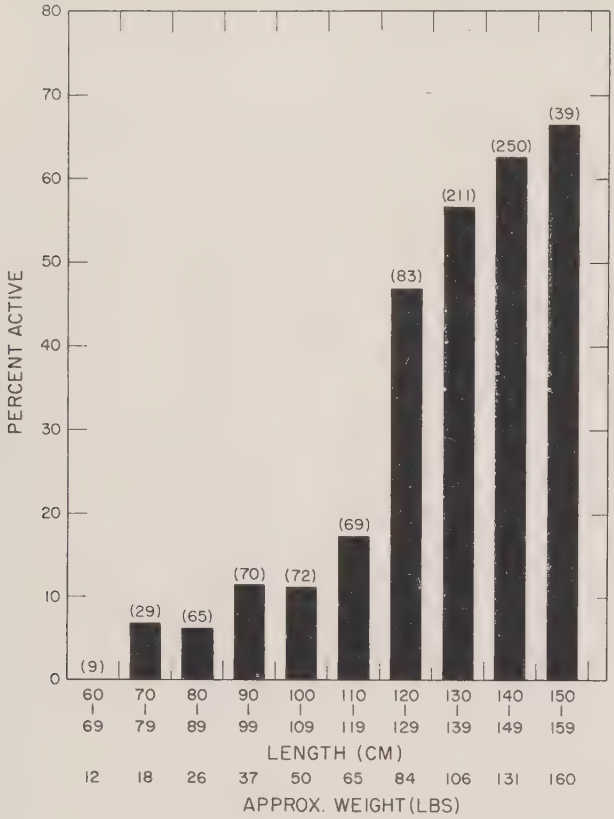

FIGURE 1.—Percentages of sexually active fish at different fork lengths. Figures in parentheses indicate the numbers of individuals on which the percentages are based.

percent were in the maturing or ripe stages. The percentage of sexually active fish increased gradually and irregularly from this length class through the 110-to-119-cm. class (about 57 to 72 lbs.), of which 17.4 percent were active. In the next 10-cm. class (about 74 to 92 lbs.), the percentage of reproductively active fish jumped sharply to 47.0 percent. Above this class the percentage of active fish increased steadily with length. Of the fish measuring 150 to 159 cm. (about 145 to 172 lbs.), 66.7 percent were active.

These data suggest that, although yellowfin as small as 70 cm. are capable of reproducing, the greater part of the population reaches sexual maturity at about 120 cm. Schaefer and Marr (1948), however, noted that in Costa Rican waters yellowfin ranging from 70 to 100 cm. spawn later in the year than the larger fish. This presents the possibility that larger fish have longer spawning periods than smaller fish, which in turn suggests that the smaller percentage of sexually active fish from 70 to 120 cm. in our samples may have resulted from a shorter spawning season rather than from a difference between the proportions of sexually mature fish above 120 cm. and those below 120 cm. Although the representation of fish from 70 to 120 cm. for each month is spotty in our samples, an examination of the monthly percent maturing and ripe (table 4) shows the peak percentage to be far less than that reached by the larger fish. This supports our interpretation of the results, that is, that the greater part of the population reaches sexual maturity at about 120 cm.

TABLE 4.—*Monthly percentages of sexually active yellowfin tuna below 120 cm. fork length*

Month	Fraction active	Percent active
January	1/12	8.3
February	2/26	7.6
March	0/1	0.0
April	2/18	11.0
May	11/101	10.0
June	11/45	24.4
July	0/1	0.0
August	3/24	12.5
September	4/12	33.3
October	0/4	0.0
November	0/31	0.0
December	0/33	0.0

LOCALITY OF SPAWNING

The data were grouped by months and by 10-degree longitudinal sections. The data for those ovaries collected between 115°00′ W. and 124°59′ W. are shown in table 5 in the 120° W. longitudinal section (the midpoint of that section), those collected between 125°00′ and 134°59′ W. in the 130° W. section, and so on, with the exception of the 180° section, which includes 175°00′ W. to 180°. Because the percentage of sexually active fish below 120 cm. was so much smaller, only fish above this size were considered in order to get results that could be used for comparison. The percentage of active fish for each month for each 10-degree section was calculated. The percentages for June and July along 180° were calculated from summarized Japanese data, which did not separate the catch of those 2 months. To arrive at the monthly totals for these months (in the extreme right-hand column of table 5), the 193 fish caught along 180° were separated into 154 fish for June and 39 fish for July, because 80 percent of the catch was made in June.

The results (table 5) show that all the sections had at least one month in which 85 percent or more of the fish were sexually active. This, coupled

TABLE 5.—*Fractions of samples of sexually active yellowfin tuna (maturing and ripe) at various longitudes, by months*

[Percentage of sexually mature fish in sample in parentheses]

Month	At longitude—							Total
	180°	170° W.	160° W.	150° W.	140° W.	130° W.	120° W.	
January			1/6 (16.7%)					1/6 (16.7%)
February	9/11 (81.8%)	1/2 (50.0%)	13/32 (40.6%)	14/30 (46.7%)				37/75 (49.3%)
March		14/16 (87.5%)		1/1 (100.0%)	34/35 (97.1%)			49/52 (94.2%)
April		28/31 (90.3%)						28/31 (90.3%)
May		7/8 (87.5%)	23/27 (85.2%)				4/4 (100.0%)	34/39 (87.2%)
June	131/154 (85.0%)	7/9 (77.8%)	38/43 (88.4%)			9/10 (90.0%)	1/1 (100.0%)	186/217 (85.7%)
July	33/39 (85.0%)	2/3 (66.7%)						35/42 (83.3%)
August			37/53 (69.8%)	7/7 (100.0%)	11/39 (28.2%)			55/99 (55.6%)
September			5/18 (27.8%)	83/115 (72.2%)	22/30 (73.3%)			110/163 (67.5%)
October			1/1 (100.0%)	3/8 (37.5%)			1/3 (33.3%)	5/12 (41.7%)
November		4/6 (66.7%)	5/28 (17.9%)	0/3 (0.0%)		1/2 (50.0%)	1/5 (20.0%)	11/44 (25.0%)
December			0/31 (0.0%)	0/1 (0.0%)				0/32 (0.0%)

with the fact that larvae below 10 mm. have been found in all of these sections (Matsumoto[1]) indicates that yellowfin spawning occurs throughout the central equatorial Pacific. The fact that spawning probably occurs throughout the entire equatorial Pacific is indicated by additional records of spawning yellowfin in the western area by Wade (1950 and 1951), Marr (1948), and Shimada (1951), and in the eastern area by Schaefer and Marr (1948) and Mead (1951).

TIME OF SPAWNING

The percentage of sexually active fish of 120 cm. and longer was calculated for each month of the year and was plotted on a graph (fig. 2). Yellowfin that had almost reached the spawning state were found in each month except December, and the greatest percentages of active fish occurred from March (94.2%) through July (83.3%). It was only during November, December, and January that the occurrence of maturing and ripe fish dropped below 40 percent. This, however, does not prove that spawning is a year-round activity, inasmuch as the length of time that the fish are in these stages before spawning is not known.

To define the spawning season further, the occurrence of residual eggs in these larger fish was investigated with respect to time. The results, plotted in figure 2, show that ovaries with early-

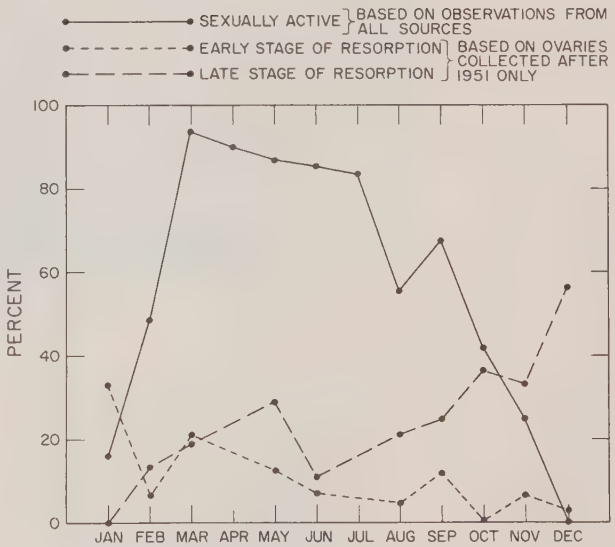

FIGURE 2.— Monthly percentages of yellowfin tuna sexually active or with residual eggs.

[1] Matsumoto, Walter M.: Descriptions of four species of tuna larvae and their distribution in central Pacific waters. POFI. (Unpublished MS.)

stage residual eggs have the same occurrence pattern as maturing and ripe ovaries. This is true for all the months except January, which is represented by an inadequate sample. The occurrence of these early-stage residual eggs indicates that spawning actually is a year-round occurrence.

Spawning in other equatorial areas of the Pacific likewise seems to be protracted. Schaefer and Marr (1948) found indications of a prolonged spawning season off Costa Rica. Wade (1950) found that the spawning period of yellowfin in the Philippine Islands extended over a considerable period, but that it was most intense during May, June, July, and August. It is probable that the prolonged spawning season is accompanied by multiple spawning—in other words, there is more than one spawning per fish in a spawning season. June (1953) considered this to be true for yellowfin in Hawaiian waters, after studying the progression of modal groups in egg-diameter frequencies.

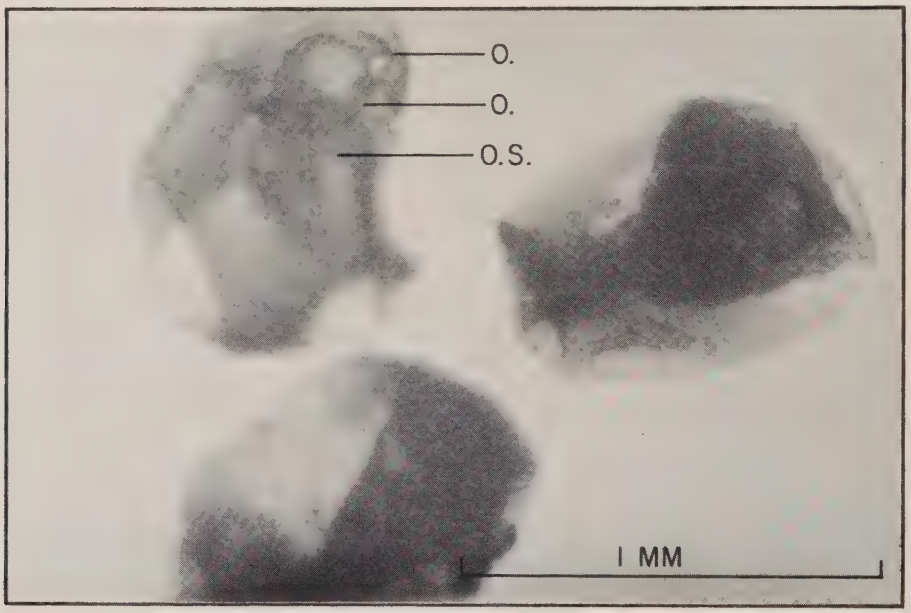

FIGURE 3.—Individual residual eggs; O., oil droplet; O. S., oil sac.

DESCRIPTION OF STAGES IN RESORPTION OF RESIDUAL EGGS

In the beginning of this study, several structures found in the ovaries could not be readily identified. As more ovaries were examined, it became evident that these structures were the remains of ripe eggs from a previous spawning which were in different stages of resorption. The following descriptions of these stages are based on gross microscopi examination and are intended to aid future worker in recognizing these structures.

Immediately after spawning, these residual egg (fig. 3) generally resemble the ripe eggs, except tha they become shrivelled owing to shrinking of th yolk mass and the resulting collapse of the chorion The oil sac is usually ruptured, and the released oi appears as bright yellow droplets. The eggs a this stage are still loose and translucent.

Subsequently the eggs lose their translucenc and collect in masses of semiopaque tubules. Th eggs are not within the tubule but are entanglec in the many disordered convolutions of the tubule

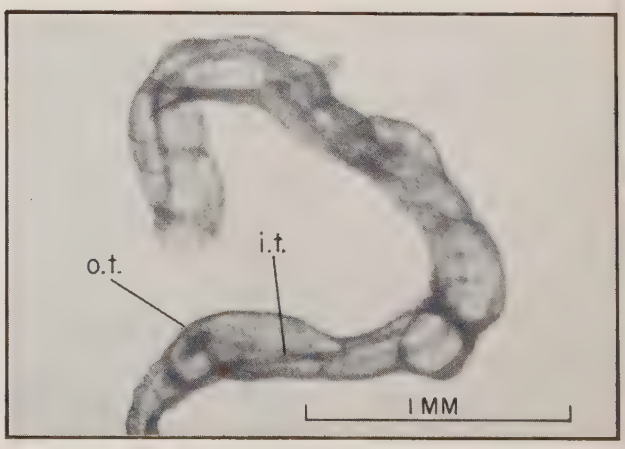

FIGURE 4.—Piece of tubule teased from ovary with residual eggs; i. t., inner tubule; o. t., outer tubule.

The tubular diameter is about 0.20 mm. Within this tubule lies another tubule with a diameter of 0.05 mm. Circular transverse ridges on the wall of the outer tubule give it a striated appearance. Figure 4 shows a short section of a tubule that had been teased from a mass.

Histologically, these masses of tubules and eggs are found to be surrounded by a connective tissue stroma (fig. 5). The wall of the outer tubule seems to be composed of reticular connective tissue. The wall of the inner tubule is made up of a single layer of closely arranged minute cells (3 μ diameter) with relatively large, deep-staining nuclei.

The origin and function of these tubules are open to question, but their proximity to the residual eggs suggests that they are involved in the absorption of these eggs.

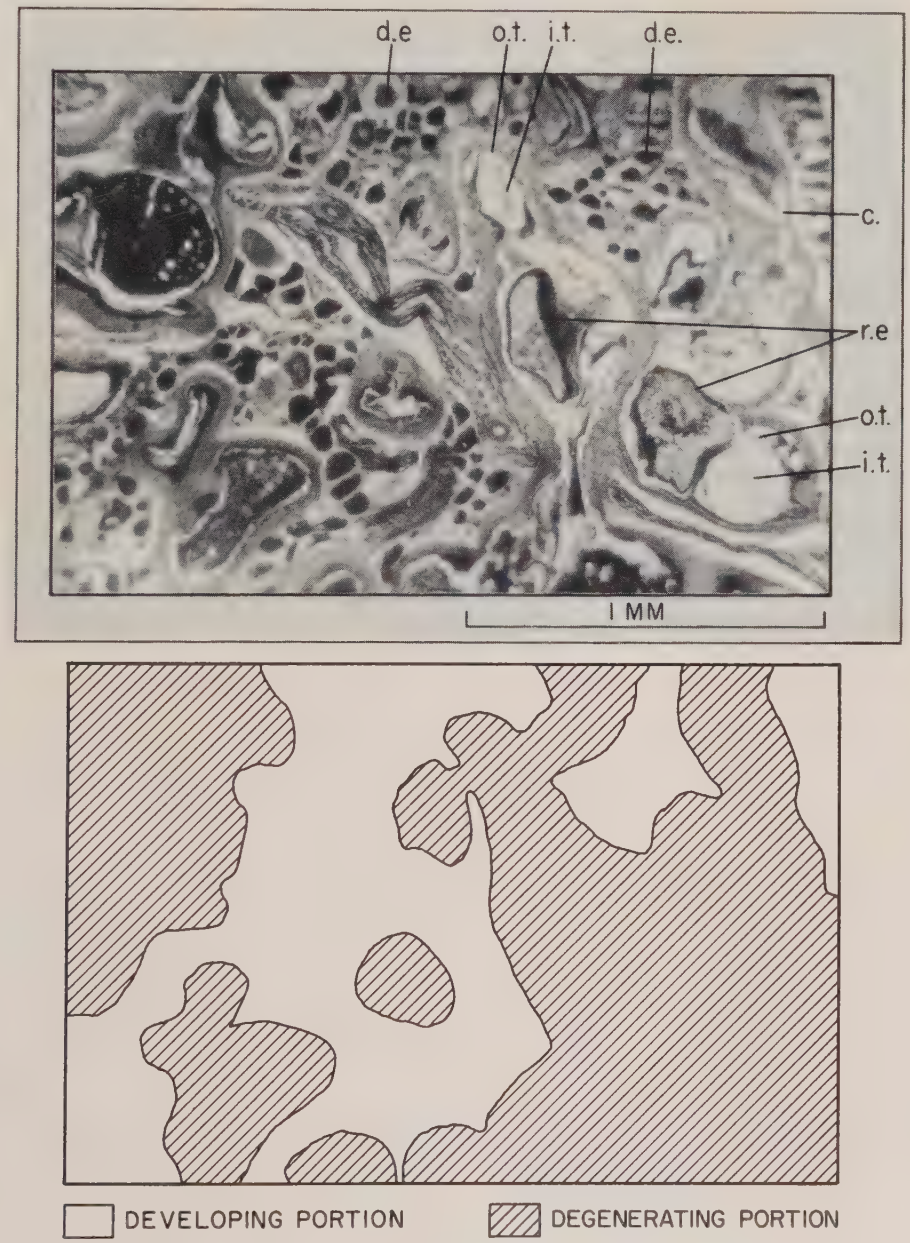

FIGURE 5.—Above: Part of section through ovary showing residual egg mass *in situ*; c., connective tissue capsule; d. e., developing egg; i. t., inner tubule; o. t., outer tubule; r. e., residual egg. Below: Diagram of this section, outlining developing and degenerating portions.

The masses of eggs, tubules, and connective tissue which are scattered throughout the ovary appear to shrink with the passage of time. An examination of later stages shows that the residual eggs are not arranged entirely haphazardly but are lined up to form indistinct cords (fig. 6). These masses eventually shrink to nondescript particles (fig. 7) before they are finally lost in the ovary.

OCCURRENCE OF NEMATODES IN TH OVARIES

While examining the eggs, we observed sever ovaries with nematodes, ranging from 0.5 cm. t 4 cm. in length. The specimens were in too poo a state of preservation to identify.

Of 25 ovaries examined for nematodes, 2 (88%) were infested. The extent of infestatio did not appear to be serious enough to affect th

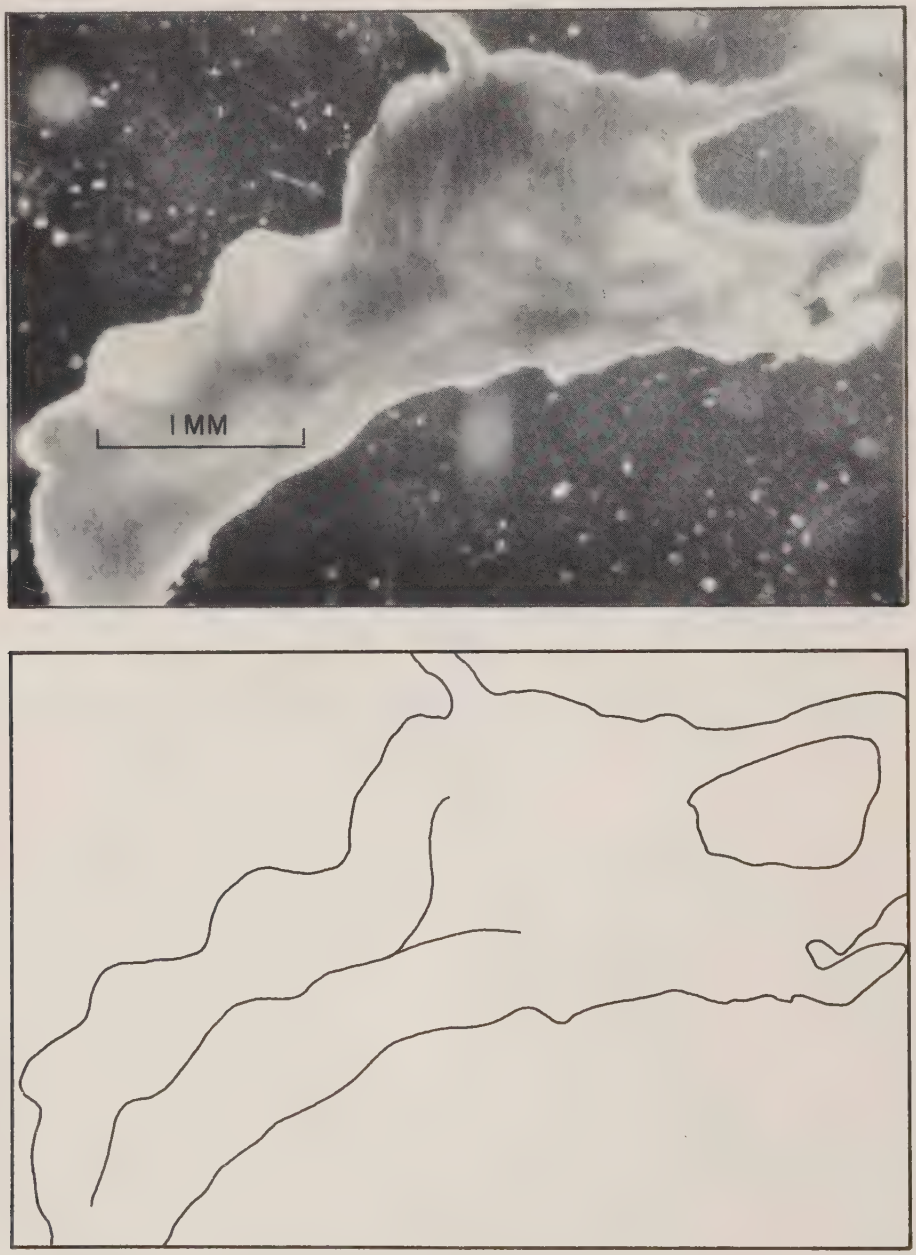

FIGURE 6.—Above: Residual egg mass teased from ovary. Below: Diagram of this mass, outlining the rows of eggs.

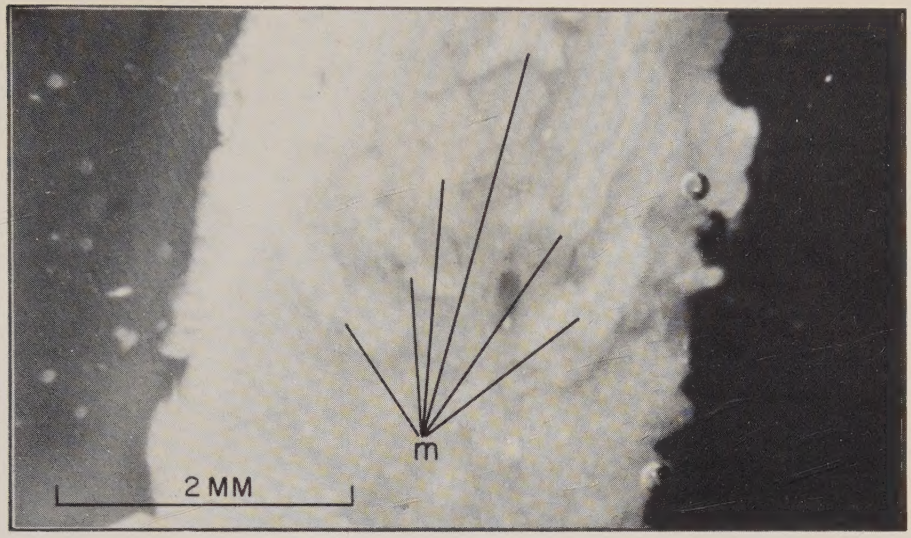

FIGURE 7.—Part of ovary showing shrunken masses of residual eggs; m., mass of residual eggs.

functioning of the ovaries. There were seldom more than five worms in a single ovary, and in only one instance did the ovarian tissue seem to be pathological owing to heavy infestation. Fish with infested ovaries were found throughout the central equatorial Pacific.

SUMMARY

This study is based on data obtained in the field relative to the time and place of spawning and the size of yellowfin tuna at time of spawning, and on laboratory examination of ovaries of yellowfin tuna obtained on POFI exploratory-fishing trips made in the central equatorial Pacific from February 1950 to June 1954. Study of the ovaries and of the data on the size and distribution of the spawning fish led to the following conclusions: (1) The size at sexual maturity may be as small as 70 cm., but usually is greater than 120 cm.; (2) the spawning season extends throughout most of the year, with November, December, and January the months of lowest spawning intensity; (3) the spawning grounds seem to include the entire equatorial Pacific.

During the course of this investigation, stages in the resorption of residual eggs were observed and described.

Unidentified nematodes were found in 88 percent of a sample of 25 ovaries. In most instances, the nematodes did not seem to be present in sufficient numbers to affect egg production seriously.

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